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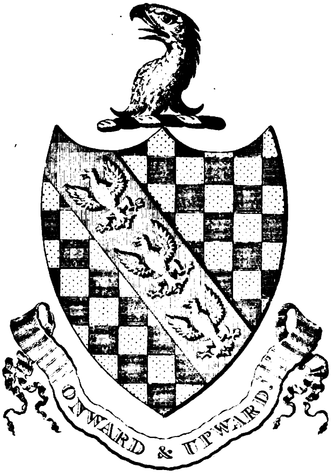
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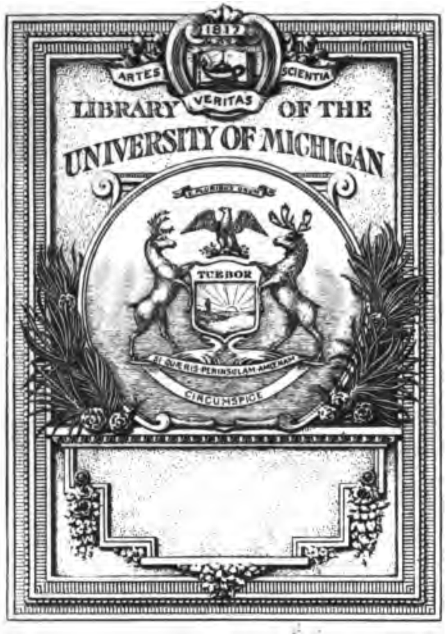
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THE ANALYST;

A

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OF

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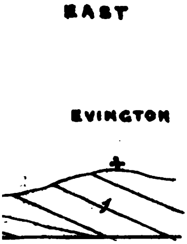

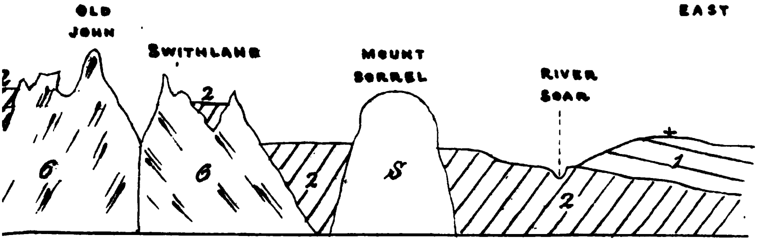

5 — Mountain limestone.

6 — Cambrian rocks.

S — Sienite.

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THE ANALYST.

A POPULAR SKETCH OF THE GEOLOGY OF THE COUNTY OF LEICESTER.*

BY J. B. JUKES, B.A., F.G.S.

THE design of the following sketch is not to convey any new information to the scientific geologist, but to lay before the general reader a short and intelligible description of the geological facts to be observed in the county of Leicester, and the inferences to be drawn from them. The science of Geology has, by the labours of many distinguished individuals during the last few years, aided by the advancement of the other natural sciences, been at length established on a firm and certain foundation—its leading principles and general outlines, as well as its most important conclusions, having been placed beyond the reach of controversion. The knowledge, however, of these principles and these conclusions is as yet possessed by comparatively few persons, even among the educated classes of mankind. What is, therefore, more especially wanted at the present moment, is to bring the matter home to every man's own door, to open his eyes to the geological facts which everywhere surround him, and to set him reasoning upon their causes of production. Geology is a science that, more than any other, admits of being made popular in every sense of the word; for though in some portions of its range it becomes matter for the profound and abstract speculations of the mathematician and astronomer, in others it links itself in with the every-day operations of existence, teaches the farmer how to drain his land or improve his soil, the builder where to procure his stone, —directs the miner in his search after the hidden treasures of the earth—enlightens the eye of the artist as to the causes of the beauty and variety of the landscape—brings to the cabinet of the naturalist whole hosts of new forms of animal and vegetable life—and excites the interest and curiosity of every man, since it details to us the history (and a wonderful history it is) of the globe on which we live. We learn from Geology that there is not a single particle of earthy matter, from the mighty masses of huge mountain-chains down to the little rounded pebble that we tread beneath our feet, but has been produced and placed in its present position by the action of regular and long-continued causes, and has attached to it "its strange eventful history." The observations that follow, then, are intended to serve as a few connected hints to call the attention of the inhabitants of the county of Leicester, or of those acquainted with it, to the facts that may be observed in it, and to the story which those facts unfold to us. I must premise, however, that if some portions of the story should, to the ungeological reader, seem not to be supported by sufficient evidence, he must not therefore conclude that evidence does not exist, since its production in every case would have made this paper a general geological treatise, rather than a sketchy description of a particular district. This description will consist of

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* This will probably be the first of a series of similar papers on the Geology of the Midland Counties.

I. A short account of the character and composition of each of the different masses of earthy matter of which the district is composed, and of their relative position with respect to each other, beginning with the uppermost and going down to the lowest.

II. Commencing with the lowest or the oldest—a succinct history of the causes which formed the different strata, gave them their peculiar characters, and placed them in the positions they now occupy.

The different masses of earthy matter, or formations, as they are called by the geologist, which compose the county of Leicester, are the following:—

I. *Aqueous or stratified rocks, in their order of superposition.*

1. Gravel, or diluvium
2. Lias
3. New red sandstone
4. Coal measures
5. Mountain limestone
6. Cambrian rocks.

II. *Igneous or unstratified rocks, having no definite order of occurrence or superposition.*

1. Basalt
2. Sienite, or granite
3. Porphyry.

GRAVEL, OR DILUVIUM.

Over the whole surface of the county, on the tops of the hills up to a certain height, as well as in the valleys, is spread a vast accumulation of water-worn materials, with every kind of irregularity as to depth, character, and composition. It is sometimes a blue or red clay, containing pebbles, fossils, and broken pieces of all the rocks of the neighbourhood; sometimes a coarse sand; sometimes nothing but a mass of pebbles of all sorts and sizes. The character of the matrix, as it may be called, in which the pebbles are sometimes imbedded, seems frequently to have a relation with that of the substratum on which it rests: thus on the eastern side of the county, where clays and marls constitute the substrata, the diluvium is generally a mass of clay; while in the neighbourhood of Charnwood Forest, on the coal measures and new red sandstone formation, it consists more frequently of sand. The harder and larger materials of which it is composed may generally be traced to their parent home either by their mineral character or their organic remains; they consist of

1. Rounded masses of hard chalk, and chalk flints.
2. Pieces of limestone, sandstone and ochraceous nodules from the oolites.
3. A vast abundance of fossils from the lias and pieces of lias limestone.
4. Pebbles of coal, and rarely one of mountain limestone.
5. Masses of slate or porphyry from Charnwood Forest, and of sienite from Mount Sorrel, Grooby, and other places.
6. Quartz pebbles similar to those derived from the Lickey hill, near Birmingham, but some of which may possibly come from Harts-hill near Atherstone, or from some part of Charnwood Forest.

The condition of these materials has always a reference to the distance which they have travelled; thus the pieces from the chalk, none of which now exist within fifty or sixty miles, are always perfectly round and smooth.

The oolitic pieces, which come from the country immediately east of Leicestershire, have all their sharp angles worn round, but are frequently of all shapes. The fossils and other pieces from the lias are often little altered from their original condition. The perfect smoothness and roundness of the quartz pebbles favours the supposition of their distant origin.

This dependence of the condition of the masses on their distance from their parent rock may be admirably seen in tracing the boulders derived from the Charnwood Forest district. These seem to have been drifted chiefly in the S.W. direction, as I never observed them to the N. or E. Over all that table land which runs a little west of Leicester, the blocks are strewed in great abundance. As you approach the forest, they become more numerous, more angular, and of a larger size, so as in some instances to weigh two or three tons, but in travelling southwards their size and number decrease, till at the distance of twelve or fifteen miles, if you find a boulder of Mount Sorrel stone for instance, it will not be larger nor more angular than a man's head.

The quantity of diluvial materials accumulated in any one place, varies from one to fifty or sixty feet in thickness. The mass sometimes assumes a stratified character, beds of fine sand alternating with beds of pebbles or of clay; these beds, however, are very irregular, being never continuous for more than a few yards, and sometimes all appearance of regularity is lost, and the whole is nothing but a confused heap. In the beds of sand it is not unfrequent to see layers of pebbles of coal (derived from the Ashby or Derbyshire coal fields) from the size of a man's fist downwards; and these having been observed in sinking wells and making excavations, have sometimes led to the erroneous supposition that coal existed immediately beneath. Mankind easily believe what they eagerly desire, or it would at once have been perceived that merely from the occurrence of these pebbles, there was no more reason to expect to find coal beneath, than there was to find chalk, oolite, slate, or sienite, pieces of all these being equally found in the diluvium. The superficial water-rolled materials here spoken of, under the general term diluvium, are never, so far as I am aware, found high upon the hills of Charnwood Forest, but over all the rest of the county they are distributed sometimes so profusely as greatly to obscure its study, masking the *inferior* rocks from our inspection. We will now, however, suppose all superficial matters to be stripped off, and the regularly bedded rocks exposed to view, the first which calls our attention being

THE LIAS.

The general dip or inclination of the stratified rocks of England being to the east, we shall in any particular district find the highest formation on the eastern extremity,* older or lower rocks rising out to the surface as we proceed westward. This is the case in Leicestershire. The very eastern extremities of the county, at its junction with Northamptonshire, Rutland, and Lincolnshire, are occupied by the inferior oolite, the lowest bed of the great oolite formation of England. From beneath this inferior oolite comes out the lias with a very gentle rise to the west, so that though its whole thickness may not be more than four or five hundred feet, it comprises a tract of country from five to ten miles wide. The western boundary of this tract, or the line where the bottom of the lowest bed comes to the surface, enters Leicestershire a little north of Loughborough, and runs by Barrow-upon-Soar, Sileby, Queniborough, Humberstone, Ebington, Kilby, and a little north of Lutterworth into Warwickshire.

The lias consists for the most part of shaly clay with bands of hard stone, called marlstone, in its middle portion, and bands of limestone in its upper and lower parts. The lower portion in Leicestershire, forms a line of low hills running in the neighbourhood of the places mentioned above, and contains several thin beds of limestone, which is occasionally quarried and used for agricultural or other purposes. That worked at Barrow-upon-Soar is the most celebrated, both for its organic remains and for its useful property of hardening under water when turned into cement. There are at Barrow seven beds of limestone, none of which much exceed a foot in thickness, and which are separated from each other by beds of shale varying from one to seven feet thick. There frequently occur in the shale hard, flattened, nodular masses of stone, which, when split open, display a fossil fish with its beautifully enamelled scales, or the bones of a saurian reptile.

These relics, together with the Belemnite, the Ammonite, the Nautilus, and the shells called Plagiostoma and Gryphœa, are found also both in the shale and the limestone; but the latter fossils are not so numerous as in some other places, and at Barrow all are valued at exorbitant rates by the native collectors. The fish are sometimes preserved with great delicacy, even the fine rays of the tail and fins, and the orbit of the eye, being perfectly and beautifully marked.* A fine skeleton, also, of the Ichthyosaurus was discovered at Barrow a short time since, and purchased by Mr. Laurance, of Leicester, for the Birmingham Philosophical Institution, in the museum of which it now forms the chief ornament, its bones having been very carefully and successfully denuded of their stony envelope.† The beds of limestone are the only parts of the lias which are of any utility; it forms generally a low uninteresting country, the land being cold and bearing few trees, while the brooks and rivers are slow and sluggish streams.

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* This rule has of course its exceptions in particular districts, where local causes have modified the dip or inclination of the strata.

NEW RED SANDSTONE.

Beneath the lias lies the new red sandstone formation, the upper beds of which accordingly come out to the light of day where the lowest of the former terminate. In Leicestershire, therefore, the before-mentioned boundary of the lias will form the eastern boundary of that portion of the new red sandstone which appears at the surface.

The new red sandstone of England consists of

1. Red marls, with green and white stripes, containing gypsum and rock salt, 200 or 300 feet.
2. Red and white sandstones, with occasional beds of marl and conglomerates (masses of pebbles cemented together) 500 or 600 feet.
3. In the northern part of England, magnesian limestone, 200 or 300 feet.
4. Lower red sandstone, about 100 feet, but variable.

The two latter portions are nowhere seen in Leicestershire, but the upper ones are well and distinctly exhibited. The first or the variegated marls, coming out from beneath the lias, gradually rise to the west till they form a line of low hills parallel with that of the lias before mentioned, and from two to three miles to the west of it. These hills, from the village of Lyston southwards, form an escarpment,‡ overlooking the valley of the Soar. They are, however, furrowed by many transverse valleys, down which small brooks run into that river. About half way down this escarpment the gypsum is generally worked, the section in the large quarry near Leicester, at the bottom of Humberstone gate, being—

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* For figures and descriptions of fossil fishes I must, of course, refer the reader to the splendid work of M. Agassiz, now publishing, which ought to have a place in every public library in the kingdom.

† An account of this specimen was lately read to the members of the Institution by Dr. Ward, of Birmingham, from which an extract appeared in the last number of *The Analyst*.

‡ An escarpment is the steep side of a range of hills, where the ends, or

	FEET
Red marl, with streaks of white and green, and having near the middle lenticular masses of gypsum lying in the plane of the beds	50
Greenish and white gypsum, with fibrous veins	5
A bed of dark red marl, one half of its substance being intertangled veins of gypsum	5
Red marl, &c.	—

Wherever the base of this upper portion (the variegated marls) is exposed, it will be found, I believe, to rest upon some whitish sandstones; but the country is so much covered up by diluvium that the only place where I have been enabled to verify this fact is the neighbourhood of Leicester. In going down from the hill on which Leicester race-course is situated, toward the Soar,† we first of all descend the escarpment of the variegated marls, about half way down which are some old gypsum pits. Having crossed the Soar, we should find in the ditch of the Narborough-road some sandy shale of a light green colour, which, gradually rising to the west, forms the capping of the Dane hills: and below it are some thickish beds of a light coloured sandstone, very soft when first got out of the quarry, but which hardens on exposure to the weather. The Dane hills are covered with old quarries worked in this stone, of which the castle, several of the churches, and other old structures in Leicester are built. The stone, however, though handsome when fresh, assumes with age a rotten worm-eaten appearance, as it wears very unequally. It is, I believe, the same as the Warwick sandstone, but there have been, as yet, no organic remains discovered in it. A saurian tooth, a bone, or the track of an animal, would well reward the perseverance of collectors; and I hope my friend Mr. Laurance will, ere long, be able to lay before the Leicester Philosophical Society some specimens similar to those which the labours of Dr. Lloyd have brought to light near Warwick. The range of this sandstone to the north

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faces, of the different beds of which they are made up are exposed to the view, one beneath another. The slope of the other side, or back of the range as it is called, depends generally on the rate at which the beds dip or incline inwards from the escarpment.

† See section No. 1.

and south is obscured by diluvium,* but some indications of it may be seen about Enderby and Narborough, and Enderby church is built of it. Its width at the surface is about two miles, as some small quarries may be seen in it on the Hinckley road, between the second and third milestones. This sandstone apparently forms the uppermost and thickest bed of several similar ones, which, alternating with red marls, spread over all the western portion of the county, except where inferior rocks are protruded to the surface. The country affords no natural section; but the engineer of the Bagworth colliery informed me that they passed, in their sinking, through upwards of three hundred feet of alternating red marls and white sandstones, one of the latter of which was fifty feet thick; but no accurate account had been kept of their relative position. Every portion of the new red sandstone formation, in Leicestershire, is always as nearly horizontal as possible, while the formations on which it rests are frequently highly inclined.† Thus level beds of red marl may be seen resting on the upturned edges of the slates of Swithland, or the sienite of Grooby, on the mountain limestone of Ticknall and Grace Dieu, while a considerable thickness of this formation spreads in level sheets over some portions of the coal field without any regard to the dislocations or different inclinations of the beds of the coal measures.

Coal Measures.

The next formation in the geological order below the new red sandstone, is that which is commonly called the coal measures, consisting of alternating beds of shale, sandstone, coal, and ironstone. In some parts of England, there is a regular passage or gradation from the new red sandstone into the coal measures, the deposition of the different materials not having been interrupted by any disturbing forces. In Leicestershire, however, this is not the case, the lower portions of the new red sandstone, and possibly the uppermost beds of the coal measures, being not known to exist in any portion of the county.

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* Dr. Lloyd, of Leamington, informs me, that one of the characters of the Warwick sandstone is irregularity, occasionally thinning out and then setting in again along the same line of country.

† When this is the case, the two formations are said to be *unconformable.* It always denotes that an interval elapsed between their depositions, during which the lower strata were affected by disturbing forces before the others were deposited upon them.

The junction of the two formations is quite abrupt, without any gradation of one into the other, and the position of the new red sandstone is, as before stated, always unconformable to that of the coal measures. They consist of many beds of coal, alternating with shales and sandstones, of which the shales greatly predominate; good beds of ironstone also occur, but are not now worked. For details of the sinkings, the number and thickness of the several beds, as well as for figures of all the characteristic fossils of the Ashby coal field, I must refer the reader to the late Mr. Mammatt's elaborate work upon that district, confining myself here to a mere outline. The Ashby coal field may be divided into three distinct districts, or basins, as they may be termed:—1. That of Measham on the south west, which is now little worked, being almost exhausted; 2. North of the Measham basin lies that of Moira, containing the collieries of Moira, Gresley, Swadlincote, Stanton, and Newall; 3. East of both these lies what may be called the Swanington basin, including the collieries of Lount, Pegg's Green, Coleorton, Whitwick, Snibston, Heather, Ibstock, and Bagworth. The boundaries of these basins are, however, irregular and ill defined, their edges being much covered up and obscured by unconformable beds of the new red sandstone.

Of the Measham basin little or no information is now to be obtained. The Moira basin occupies a district about five miles in diameter, the Moira colliery being the deepest and most centrical. The main coal at Moira is thirteen feet thick, consisting of two beds, of which the uppermost has a thickness of seven feet, and, being there the best, is the only part worked. Proceeding north west from Moira, however, these beds become separated by a parting of shale, which increases from eighteen inches, at Swadlincote, to twenty yards, which is its thickness at Newall; and over this district the lower coal is the best and most worked. At Stanton, however, one mile west of Newall, the parting being eighteen yards thick, the upper bed regains its quality, and is the one worked in that colliery. The Moira basin is much broken by faults,* the principal of which run twenty or thirty degrees west of north, and are crossed by others at right angles to them. One of the largest of the north west faults runs in a directly straight line from Brambro, through Moira colliery, Swadlincote, and Spring Wood,* to near the Decoy in Bretley Park, a distance of five miles. It causes a down cast to the east of four hundred and twenty feet.* A singular circumstance with regard to this coal field is the fact that for the first three hundred feet from the surface the water is perfectly fresh and soft, but below that depth it is quite salt. Advantage has been taken of this circumstance, to establish baths, but the salt is not in sufficient quantity for the profitable establishment of salt-works.

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* A fault is a fracture of the strata, causing an elevation or depression of the beds on one side of it from their original level.

The Swanington basin has a triangular shape, the apex being about Lount, and the sides spreading out to Whitwick and Heather. It dips gently to the south east, its edges being turned up to the south west and north east respectively. It thus forms a long trough, the northern end of which is raised, and which slopes gradually to the south east till it becomes covered over with level unconformable beds of new red sandstone. This covering of red marls and sandstones is, at Whitwick and Snibston, about a hundred and fifty feet, while farther south, at Bagworth, it is three hundred feet in thickness. This basin is affected by very few faults, but the different beds seem rather irregular in thickness and extent, the beds of coal being the most constant. It is indeed, most probably, the same bed of coal which is worked as the "main coal" over the whole of the Ashby coal field, except at Lount and some other extreme points, where beds lower than the "main" are worked. At Whitwick and Snibston a mass of basalt, in one place sixty feet thick, is found in the upper portion of the coal measures. This, where it touches the coal, has burnt it into coke, and has changed a sandstone into a compact rock, almost as hard as itself. Some trials have been made for coal south of Bagworth, but nothing certain seems yet to have been ascertained respecting the southern boundary of this basin; and any workings in that part of it must always be attended with considerable risk and great expense, on account of the overlying measures of red marl.

MOUNTAIN LIMESTONE.

Of the mountain limestone, which is the next formation in the descending order below the coal measures, some small patches occur a few miles north and east of Ashby-de-la-Zouch. Of these the largest is that on which the villages of Staunton Harold, Calke, and

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* That is to say, that the beds east of this fault are four hundred and twenty feet lower than the beds on the west of it, with which they were once continuous.

Ticknal stand. The others are five small isolated hills, which run in a directly straight line, a little west of north, from Grace Dieu Abbey, namely, Grace Dieu, Osgathorpe, Barrow Hill, Cloud Hill, and Breedon Hill, the extremes of this line being rather more than four miles apart. The first-mentioned district is about two miles long from north west to south east, and rather more than half a mile broad. It is a low saddle-shaped mass, the northern side of which dips fifteen degrees to the north east at Ticknall, and is overlaid by level beds of red marl; and the southern may be seen, near the first pool in Calke Park, to dip south west, at an angle of about twenty degrees, and thus buries itself beneath the Ashby coal field, of the northern part of which it no doubt forms the floor.* One of the quarries at Ticknall exhibited the following section :—

	FEET.
1. Level beds of red and variegated marl	15
2. Beds of dolomitic limestone	5
3. Shale, with beds of limestone	20
4. Hard blue limestone	10

Nos. 2, 3, and 4 are full of mountain limestone fossils, and dip fifteen degrees north east, while No. 1 is perfectly horizontal. At Dimminsdale, a little south of Calke, the limestone lies nearly level, the quarries being just about the crown of the arch. It consists here of some alternations of shale and gritstone resting upon limestone, of which about forty feet were exposed. Parts of the limestone are dolomitic, or magnesian, and contain bunches of galena, or lead ore, which in one place is worked in what is technically called a pipe vein —that is, a circular excavation following the run of the ore. The eastern bank of the little valley of Dimminsdale apparently consists of shale to the thickness of a hundred feet, and on the top of it are some old quarries in a sandstone which probably represents the millstone grit, and of which some traces may also be seen on the south side of the first pool in Calke Park. As soon as you have ascended this bank, however, you find yourself on the level beds of the new red sandstone again.

The five small hills before mentioned as belonging to the mountain limestone formation, have all a westerly dip, the angle varying from twenty degrees, which is that of Grace Dieu, at the southern extremity of the line, to seventy degrees, which in some places is that of Breedon at the northern extremity. The limestone of Breedon and

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* See section No. 2.

Cloud Hills is for the most part completely dolomitised, or converted into magnesian limestone, with a cellular structure running along the line of the beds. The fossils, too, are all in the state of casts, but they are always such as are characteristic of the mountain limestone, as *Spirifers*, *Productæ*, *Enomphali*, or *Bellerophons*. Breedon is so traversed by faults and joints in various directions, as at first sight to have its stratification almost obscured: this, however, by a little attention, may always be perceived, and will be found to dip fifteen degrees to the south of west, at an angle varying from thirty-five to seventy degrees. The limestone of Grace Dieu is similar to that of Ticknal, only particular beds of it being magnesian. These hills are everywhere surrounded by level beds of new red sandstone, out of which they rise abruptly towards the east, with the broken edges of their beds sticking up into the air, and seemingly unconnected with any other portion of the country. We shall, however, shortly be able to connect their elevation with that of the slates of Charnwood Forest.

CAMBRIAN ROCKS.

Of the rocks which, in other localities, lie immediately beneath the mountain limestones—namely the old red sandstone and the silurian formations—Leicestershire presents no example whatever. In South Wales the old red sandstone has a thickness of upwards of 10,000 feet, and the silurian system which lies below it consists of four great formations, each many hundred feet thick, and each stored with its peculiar and characteristic fossils. In this county, however, no trace of any of them is anywhere to be perceived. Of the next inferior group of rocks, however, which, coming out from below the silurian, form the slate mountains of Wales, Cornwall, and Cumberland, we have, in Leicestershire, a miniature example in the hills of Charnwood Forest. This system of rocks is termed by Professor Sedgwick the Cambrian system, and he divides it into two great groups, the upper and lower Cambrian, each having a very great thickness, and each, in Wales, containing organic remains. To which division of the Cambrian rocks we must refer those of Charnwood Forest, is, in the absence of organic remains in that district, of course doubtful; Professor Sedgwick himself being unable to decide the point. The discovery of the merest trace of shells, then, or other fossils in the slates of Charnwood Forest, would be highly valuable. The rocks themselves consist of every variety, from a coarse greywacke to a fine-grained clay slate. The finer portions have generally a well-defined cleavage, or fissibility, in a certain direction that gives to the rock its slaty character. The direction of this cleavage, or way in which the rock splits into slate, is not along the beds, as would at first be supposed, but across them, the same lines traversing the whole of the beds from top to bottom. The original bedding of the rock may be discovered by observing its variations in colour and texture; as where a coarse band may be traced between two fine ones, or, where they exist, by the beds of organic remains. Bands of different colours, technically called "the stripe," may be frequently observed, which are always parallel to the true beds, and by their help the real dip of the strata may be found out. Some general, but at present obscure, agency has so acted upon these rocks as, some time after their formation, to have sealed up as it were their original beds, and given the mass a tendency to split in other directions. Upon this subject, however, I must refer the reader to Professor Sedgwick's paper on the "Alterations produced in Rocks after their Formation," in the third vol., N. S., of *The Geological Transactions.* The slate rocks of Charnwood Forest are frequently associated with porphyries, which occur either in beds or in irregular masses; and over all the north west portion of the district, the porphyries or igneous rocks are by far the most abundant material, having almost entirely usurped the place of the aqueous rocks, and altogether obscured their stratification. This is the case with Bardon Hill, and the hills north and east of Whitwick. In the other parts of Charnwood Forest, however, the dip or inclination of the strata is quite plain and easily ascertainable by any one who has had the different lines of cleavage, stratification, and joints clearly pointed out to him.* By an examination of the district, it will be seen that a little north of Bradgate Park, and between the hill called Old John and Swithland, there is a valley called Lingdale, which runs a little west of north and east of south. A line drawn along this valley and continued each way, will divide the Charnwood Forest district into two unequal parts, the largest being that to the south west of the line. Now the rocks of which these two parts are composed dip in opposite directions—all those lying to the north east of this line dipping to the north east, and those lying to the south west of it dipping south west.† This line, then, is called the anticlinal line, the beds inclining downwards from it on either hand. The amount of their inclination varies, but it is frequently as much as sixty or seventy, and I never saw it less than twenty-five, degrees.

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* My own knowledge of this district, and of the north of the county generally, was gained in the autumn of 1837, in an excursion, during which I had the advantage of the tuition of Professor Sedgwick.

† See section No. 3.

SIENITE.

In describing the aqueous, or stratified, rocks, we have seen two kinds of igneous rocks associated with them, namely basalt with the coal measures at Snibston, and porphyry with the slates of Charnwood Forest. There is yet, however, another igneous rock, which makes a conspicuous feature in the country, but is not so intimately associated with any aqueous rock as to admit of being described with it. This is the sienite, or granite as it is commonly termed, from which indeed it differs only in the scarcity or absence of mica. The sienite occurs in detached hills round the outskirts of Charnwood Forest, at Mount Sorrel, Grooby, Markfield Knoll, Cliff Hill, and in Bradgate Park; it also protrudes above the new red sandstone, a few miles South of the Forest district, forming the hills of Enderby and Croft, and being visible near Narborough, at Burrow Hill near Potter's Marston, at Stoney Stanton, at Sapcote, and probably at some other spots with which I am not acquainted. It becomes a question of some importance to determine how far this latter group is connected with that which fringes the south of Charnwood forest. If (as I have been informed) the sienite was reached at the depth of eighty yards, in a boring that was made near Kirby Muxloe, it would go far to prove that there is a connected sienitic ridge running across the county, beneath the level beds of new red sandstone, the higher peaks of which only appear at the surface at different places. It is a fact, however, that the type of the southern group differs materially from that of the northern, being less granular and crystalline, and more compact and porphyritic looking. How far, however, this difference may be due to the difference of the conditions under which they were produced, or how far it might bear us out (in the absence of contrary evidence) in supposing them to be only connected at a considerable depth, I am not prepared to say. There is certainly no reason to suppose them to have been produced at different periods of time.

These are the principal materials of which (so far as has yet been ascertained) the county of Leicester is composed, and the positions which they occupy with respect to each other. It remains for us now to take a hasty glance at the history of the causes which produced these materials and placed them in those positions.

To begin, then, with the lowest, and therefore the oldest rocks, which are found in the county, the slates namely of Charnwood Forest, we see that a great sea once existed over this portion of the globe, at the bottom of which there was deposited a vast amount of earthy sediment. This sediment was gradually accumulated, since it consisted of alternate beds of fine and coarse materials, successively deposited, and not mixed up the one with the other. We know that this sea was inhabited by various animals, for though none of their remains have been found in the slates of Charnwood Forest, there are abundance of them in the other portions of the same rocks which form the mountains of Wales. This absence of organic life over that portion of the bottom of this sea which is now visible in Leicestershire, may possibly be due to the action of volcanic causes, for along with the aqueous rocks formed in it, we find beds of igneous rocks, which we know to have been poured out in a state of fusion, like great flows of lava, and to have been afterwards covered up by other aqueous sediment. Great masses of these melted rocks were also in some places protruded among and into the previously formed aqueous rocks, so as sometimes to obliterate their stratified character. These igneous rocks having cooled down under pressure, have become what we term porphyry; and the aqueous rocks having become indurated, and having at some subsequent period been affected by a peculiar agency, which has given them the property of fissibility in a certain direction, are now what we call slate and slate rock. Giving to the whole mass a general term, they are called Cambrian, because the same rocks form a great portion of Wales.

After the formation of these Cambrian rocks, there elapsed an *interval*, of what length it is impossible to say, but sufficiently long to allow of the accumulation in some localities of stratified rocks many thousand feet thick, and for great changes to take place in the animal and vegetable kingdoms of our globe. During this interval we have no indications given us of the state of this particular district; either it was dry land, or, if sea, no strata were deposited in it; or lastly, if strata were deposited, they have since been destroyed.

After the lapse of this long period, however, whatever it may have been, we again arrive at something certain, and find that sea existed over at least a portion of the district, in which were deposited those calcareous materials which now form what we call the mountain limestone. This sea was full of animals, more especially *Polypi*, *Radiaria* and *Mollusca*, since we find corals, encrinites and shells in great abundance at Ticknal and the other before-mentioned places. This sea, after being partially filled up by these materials, which were deposited by a slow and gradual process, became subject afterwards to new conditions, the animals which inhabited it gradually perished, and its place was either occupied by freshwater, or it itself was filled with materials swept from freshwater and from the land. These materials, strewed in repeated successions over wide areas, consisted either of mud, sand, or vast accumulations of vegetable remains. The mud when deposited at the bottom and partially indurated, became shale, or when containing much iron was converted into ironstone, the sand was compacted into sandstone, and the vegetable substances undergoing a chemical change beneath the vast pressure of the superincumbent materials, were turned into beds of coal. These vegetables when examined by the botanist, are immediately declared by him to have been the produce of a tropical temperature, and the greater part to have lived upon the land, although all differ and many of them widely so, from any now known to exist. The perfect state of their parts forbids the supposition that they were washed from any distant regions, and though we cannot point out where the land was situated on which they grew, we are yet assured that this portion of the globe was once much hotter than at present, and that its lands were covered with the thick and matted vegetation of an Indian forest. The period which the coal measures occupied in their formation was long enough to allow of many successive growths and partial destructions of whole forests, and for different materials to be successively and gradually accumulated, till they formed a thickness of considerably more than a thousand feet.

At the close of this period, and before any of those materials which now rest upon the coal measures were deposited, great disturbances took place over this district. Dislocating and upheaving forces acting from below, broke up the coal measures and other previously existing rocks, caused the great faults which are everywhere found in them, set on edge the masses of mountain limestone north-east of Ashby, and bent up the Cambrian rocks which now form the hills of Charnwood Forest. It may be asked, how it is known that all these dislocations took place at this precise period, after the formation of the last of the coal measures, namely, and before the deposition of the upper part of the new red sandstone. The latter condition is quickly verified from the facts before mentioned, that the beds of new red sandstone when lying on the upturned edges of the inferior rocks, are always horizontal: it is obvious, therefore, that when the forces acted which disturbed those rocks, the beds of new red sandstone did not exist, or they would likewise have been disturbed. The other conclusion, however, will to the ungeological reader be not so evident. But if he trace the anticlinal line which runs through Charnwood Forest, and produce it to the north, he will find that it is parallel with that of the five hills of mountain limestone before mentioned, and runs about half a mile to the *east* of them. Now this anticlinal line is the line of direction along which the upheaving force acted that elevated the forest, giving to the beds west of that line a westerly dip, and these mountain limestone beds also lie to the west of the line, and have likewise a westerly dip. The western side of that line also is that on which the greatest amount of upheaving force was exerted, as we see by its effects, and we should consequently expect to find traces of its action further on that side than on the other. From these and other considerations, it is clear that the same force which uplifted the Charnwood Forest rocks, likewise set on edge those hills of mountain limestone, and the period of the uplifting of the mountain limestone we know to have been that of the coal measures, and therefore we get the whole linked together as the result of one general cause acting after the deposition of the coal measures, and before that of the upper portion of the new red sandstone. This result, if further proof were necessary, would be greatly strengthened by examining the adjacent districts. In the Warwickshire coal field, for instance, we find the Cambrian rocks of Hartshill, which must be nearly of the same age with those of Charnwood Forest, dipping in the same direction and nearly at the same angles with the coal measures that rest upon them, the elevation of both being evidently due to the same exertion of upheaving power. It is remarkable also that the line of elevation of these rocks in Warwickshire, is for the most part parallel with that of Charnwood Forest. In Warwickshire, however, the lowest part of the new red sandstone formation is seen resting on the coal, and evidently affected by the same forces of elevation with it.* It passes down into the coal measures moreover by a regular gradation, and near the junction of the two, occurs the same thin band of freshwater limestone as is seen in Shropshire and Lancashire, in the same situation. The upper portion of the new red sandstone, however, occurs in other parts of this district, in level unconformable beds, so that we are enabled here still farther to limit the period of elevation of the coal field, and say that it took place between the formation of the lower part of the new red sandstone system and the upper of the same. Whether this would be true of the Leicestershire district we cannot determine, since here the lower portions of the new red sandstone are wanting, or at all events not visible at the surface. We can, however, in Leicestershire point to one of the very agents which were accessary to all this disturbance, namely the sienitic rocks before mentioned. These, in their expansive struggles at escape, forced themselves while yet molten masses through the cracks and fissures which were then produced in the inferior rocks, and having cooled under the pressure of great depths of water or other materials, assumed the crystalline structure which they now possess. The only anomalous circumstance respecting them is, that they are on the outskirts of the Charnwood Forest district, and not in its centre.

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* See section No. 3.

Over the broken and irregular surface thus formed by these forces of disturbance, a sea still flowed, which, upon tranquillity being restored, deposited the level beds of sandstone and marl which form the upper portion of the new red sandstone. These filling up the inequalities, smoothed the whole over up to a certain height, leaving only the highest portions of the previously existing rocks uncovered by its beds.*

After the deposition of all this red sediment, the sea became again the dwelling place of numerous animals different from any which had gone before them. Mollusca crawled upon its bed or floated on its calmer surface, fishes sported in its waters, and the terrific Ichthyosaurus was formed to dash through its stormy waves, and reign the despot of the "ocean stream." At the bottom of this sea, blue clay was now deposited, with occasionally some carbonate of lime, forming the lias, in which has been preserved many a relic of these creatures of the past, to tell us who and what preceded us in the habitation of this globe of earth. After the formation of the lias there elapsed another enormous interval, measured by the deposition of the remainder of the secondary and the whole of the tertiary formations, during which that which is now the county of Leicester, remained undisturbed by convulsions from below, and as far as we can tell, augmented by depositions from above, until a comparatively most recent period; when water exercising a degrading and denuding power, acted on the previously formed rocks, broke off pieces of them, and after washing them about in strong currents, till they were rounded into pebbles, broken down into sand, or ground into clay, has left the materials thus accumulated strewed irregularly over the surface. What was the character of these waters, whether they rushed as strong floods over previously clay land, or whether they were currents caused in a sea by the elevation of its bed, I shall not pretend to determine, though my own opinion leans to the latter supposition. At all events, ever since the accumulation of those loose materials to which for convenience sake the term diluvium is attached, Leicestershire, in common with the rest of England, has remained permanently uplifted above the level of the sea, unchanged save by the slow and silent action of the atmosphere, or in these our days by the trifling scratches inflicted by the hand of man.

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* Some portions of the red marls exist on the flanks of Charnwood Forest, at a height considerably greater than their general level; their position, however, may I think be easily accounted for, if we reflect that in a sea with an uneven bottom, and in which depositions from above were taking place, some portions of the sediment might in favourable situations be retained at much higher levels than the general beds.

The science of Geology is sometimes regarded by practical men as a mere mass of theory from which no results can be derived useful for practical purposes: in any operations, however, connected with the mineral matters of our globe, it surely never can be supposed a useless thing to know the causes which produced them, and the forces of disturbance which have acted on them, since from such knowledge alone can we tell, previously to actual experiment, the probable character and position of the matters in question. In this respect, too much is sometimes required of Geology in its present state; the science is the creation of the last few years, and already has it accumulated a vast amount of information respecting the structure of those parts of the earth which are accessible to our investigations, that will for ever preclude the recurrence of many wild and ruinous undertakings in search of coal and other minerals, that have formerly been blindly set on foot. New facts are every day gathered together, and the science is fast approaching the condition when it will be enabled to bring most powerful aid to many operations that are useful or necessary to our existence, that administer to our comfort and enjoyment, or that augment our individual and social powers and resources. It must, however, be borne in mind that all these are but means to an end, that end being the elevation of ourselves in the scale of moral and intellectual existence, and that independently of all other considerations. Geology directly and most powerfully conduces to this end, by spreading before us whole regions of new space for the exercise of our moral and intellectual faculties.

As a few practical questions, however, I may state—1st. It is probable that the Ashby coal field is continued beneath the red sandstone to the west and south, but at too great a depth to render its working practicable, for the present generation at least. 2nd. It is improbable that coal exists in the eastern portion of the county, or there would be some of the rocks connected with it at the surface, somewhere on the east or south of Charnwood Forest; the elevation of the forest rocks having taken place after the formation of the coal strata, and the line of that elevation running from north west towards the south east. 3rd. It is not improbable that rock-salt should be found in the south east of the county, in the upper portion of the new red sandstone, as a salt spring exists at Shearsby.

There are many minor practical points in which a knowledge of the geological structure of the country would be useful, but which would require more minute details.

DIVI BOTANICI;

SKETCHES OF BOTANISTS WHOSE NAMES ARE COMMEMORATED IN THE APPELLATIONS OF PLANTS.

Article the Second.

Linnæus exercised a delicate and judicious discrimination in his adoptions of botanical names which perpetuated the reputation of personages by whom, in early times, the investigation of plants had been advanced or encouraged. Feeling conscious of his own qualifications, and asserting his well-established right, to administer the office of a phytological lawgiver, the "Immortal Swede" promulgated Rules* for limiting the practice of honorary "denomination" when appropriated by himself, and for directing his disciples in assigning the highest distinction in their science to its most active and eminent votaries. These Rules derived beautiful characters from the Legislator's enlightened imagination, and especially from

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* These Rules, with many equally good ones besides, stand clearly defined by Linnæus himself, in the excellent work which contains an exposition of his phytological principles—his *Philosophia Botanica, in quâ explicatur Fundamenta Botanica cum definitionibus partium, exemplis terminorum, observa-*

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tionibus rariorum, adjectis figuris: 8*vo*, *Holmiae*, 1750, and numerous subsequent impressions. It was translated into Spanish by Don Antonio Capdevila; 8vo, Madrid, 1771; and into French by F. A. Quesné; 8vo, Paris, 1788, which is, in the opinion of a French critic, "an imperfect, though respectable, version of an almost untranslatable book." The Linnæan Rules for Nomenclature are translated and freely discussed by Dr. Colin Milne, in his *Botanical Dictionary, or Elements of Systematic and Philosophical Botany*, forming a complete System of Botanical Knowledge, for the use of Students in that Science; 8vo, London, 1770, 1777, 1805. This is a very convenient and useful "system;" and, with its successive improvements, is well calculated to facilitate the researches of naturalists, as they explore the constitution of the Vegetable Kingdom and the relative adaptations of its elements. Dr. Milne's dictionary is very comprehensive, but concise and perspicuous. It contains descriptions of the parts of plants; an explanation of the scientific terms used by Morison, Ray, Tournefort, Linnæus, and other eminent botanists; a brief analysis of the principal systems in Botany; a critical inquiry into the merits and defects of the Linnæan method of arrangement; sketches of the natural families of plants, their habits and structure, virtues and sensible qualities, and economical uses; an examination of the doctrine of the sexes of plants; and a discussion of several curious questions in the vegetable economy connected with gardening. Five years afterwards, Mr. Hugh Rose, of Norwich, prepared a pure English version of the entire original Treatise of Linnæus; and, in terms of great modesty, he submitted it to the acceptance of "those who are fond of the study or fashionable amusement of practical Botany which, with him, "consists in the definition, disposition, and denomination of plants." His book bears the title—*The Elements of Botany:* containing the History of the Science, with accurate definitions of all the terms of art exemplified in eleven copper-plates; the scientific arrangement of Plants and Names used in Botany; and Rules concerning the general history, virtues, and uses of Plants; being a translation of the *Philosophia Botanica* and other treatises of Linnæus: to which is added an Appendix, wherein are described some Plants lately found in Norfolk and Suffolk, illustrated with three additional copper-plates, all taken from the life: 8vo, London, 1775. Mr. Rose's *Elements of Botany* might be advantageously revised and enlarged, so as to support the exquisite System whose principles they disclose with unusual faithfulness and effect. The nomenclature of this system is ingeniously artificial; but, whether it be designated the *Linnæan* or the *Sexual*, it possesses as many natural features at least as the *Natural* Arrangement by which, with an excess of wordy effort, it is now so much the fashion to desire that it may be supplanted. Verily, the latter has its merits, and let these be fully acknowledged: yea, let high praise be the meed of its sesquipedalian beauties; but let not this exceed what is just, and thus be a great deal too *honorificabilitudinitaceous!*

the perfection of his judgment matured by experience. He enjoins, with manifest propriety, that, in Botany, generic names should not be abused by conferring them on saints or men renowned in any other art or science, in order to prolong the remembrance of such persons or to court their favour; from the certainty that, with regard to the former, the greatest of such saints were generally the grossest sinners: that the generic names borrowed from the fables of ancient poets, or from the fabulous designations of their heathen deities, who originally were illustrious mortals, for the reason that these names commonly had reference to the exercise of some good disposition or to the result of some beneficent action: that the appellations consecrated to the memory of kings, princes and great men, who have promoted the knowledge of Botany, deserve to be retained: and that the generic names made to commemorate the merits of excellent botanists, universally ought to be held sacred; for, as this is the only and the best reward of their labours, it should be viewed with reverential estimation, and dispensed to those solely who have effected valuable improvements in Botany, that others may be thereby induced to cultivate and adorn the science.

From a remote period in the History of Herbs, the plant Musa obtained its name from a modification of the term by which it was popularly known in those intertropical regions where it grows, indigenous and abundant; but, in harmony with the foregoing Rules, and without change in the orthography, this appellation was expressly determined by the authority of Linnæus himself, that it should be, in his System, the memorial of a "great man" who endeavoured "to promote the knowledge of Botany" by explaining the qualities of a salutary vegetable, and to extend the benefits of medicine by imparting an extraordinary contribution to its resources. Now, this justly honoured individual was

Musa *the Physician.*—Habitually animated by the insatiable spirit of Democracy, the Rulers of the Roman Republic intuitively approved and zealously promoted the inherent selfishness and ferocity of a Sovereign People, by the device of ordinances for perpetuating a system of the most cruel and iniquitous despotism—the despotism of Slavery,* with all its atrocities and diabolical abominations. During the lapse of many ages, these sagacious and venerated barbarians persevered in maturing the practice of enslaving every alien nation which their fierce and sanguinary armies were able to ruin and despoil of its independence. This system of outrage on the divine institutions and on the natural rights of men was designed to increase the opulence and power of the oppressor; but, like every other national enormity, it conduced with slow but certain influence to aggravate the bane of rottenness and depravation to which even the strongest constructed tyranny is necessarily exposed. From this state, unusual merit occasionally redeemed a captive and raised him to the humbling rank of being respected as the "freed man" of his enslaver, with a right to the chance of gleaning some reputation or property in the applications of his skill and experience directed by a good mental endowment. Such was the fortune of Antonius Musa, who gained the high office of "Archiater to Augustus," and received the meed of a deification from the chief priest of Botany, in after-days, with an immortality greatly more exalted than that which was bestowed by vassals and parasites on his imperial master.

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* With powerless or pennyless declaimers, it has long been the unworthy custom to revile the memory of Julius Cæsar, the dictator, with loud and liberal abuse, as the extinguisher of his country's liberties. Nevertheless, it was this celebrated personage, alike distinguished as a soldier, a statesman, and a scholar, who exercised a high moral intrepidity in modifying the injus-

Historians and traditionary chroniclers, and the poets also, are all equally silent concerning the native land of Musa, the places of his education, and the circumstances of his captivity. He is sometimes represented as a Greek by nation; and, if this statement has a sure foundation, he must have fallen a sacrifice to the rapacity of those ruffians by whom the last germs of Grecian freedom were trampled in the dust. His possession of "useful knowledge" and his attainments in philosophy would render him an object of desire to the wealthy or ambitious; and, in consequence of his worth, he was preferred by the august "slave-owner" to whom the "liberal" Roman citizens submissively entrusted the absolute guardianship of their "civil and religious liberties."

tice of that republican law which sanctioned and sustained the despotism of slavery. He it was, while magnanimous patriots all around him were stunning Rome with noise of virtuous cant, though hatching secretly a deed of murder, he alone it was, who offered a generous homage at the shrine of Intellect, by proclaiming liberty to the enlightened captive. History relates, with grateful approbation, the fact that Julius Cæsar conferred the freedom of the city on all those who practised the medical profession, and on those who taught the liberal arts, as an encouragement for these persons to establish themselves in the capital, and for others to desire the privileges of Roman citizens. Cæsar merely concentrated the sordid tyranny of the Many into the arbitrary sovereignty of the Few. His successor gave peace to the world for half a century, and prosperity to his many-peopled dominions.

Antonius Musa appears first on the page of Biography, as the freed-man of Augustus, and the physician who instituted a new kind of treatment for the recovery of that potentate, from a dangerous sickness. Pliny "flourished," not many years after the demise of Augustus, about the middle of the first century; and, from his rank as a soldier, a senator, an augur and a provincial governor, in which the "admirable naturalist" was engaged during his short but meritorious life, he had access to accurate information regarding his statements of circumstances connected with the imperial court and its most distinguished members. He particularizes two occasions* whereon the "servile physician" prescribed remedies which produced the happiest results. Speaking of the Lettuces, their virtues and kinds, he says in Dr. Holland's English, to "say a truth, all Lectuces† are by nature refrigerative, and do cool the bodie, and therefore be they eaten ordinarily in summer; for they please the stomacke when it is inclined to loath meate, and procvreth appetite. Certes, reported it is of Augustus Cæsar, late emperour of famous memorie, that he escaped a dangerous disease, and was recouered by the meanes of Lectuce whereunto he was directed by the discreet counsell of Musa his physician."

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* When speaking of "Vetches and Eruile," another illness of the Emperor is mentioned by Pliny, besides those which were treated by Musa with Lettuces and cold applications. "As touching Eruile," he says, "it asketh no great hand or trauell about it: yet thus much more attendance it requireth than Vetches, for that it must be weeded and grubbed about the roots. Besides, this kind of Pulse is of great vse in Physick; for Augustus Cæsar was cured of a disease that he had, and recouered his health by means of Eruile, as himselfe reporteth in some of his letters now extant. Moreouer, fiue pecks of Eruile sown, is sufficient to maintain and find a yoke of oxen: as for that which is sowne in March, it is hurtfull forage for kine and oxen, as also that which is sowne in Autumne maketh beastes heauie and stuffed in the head, but that which is pvt into the ground in the beginning of Springe is harmless.—Holland's *Plinivs*, I, 572. "As touching Eruile and the properties thereof," Pliny recapitulates and enlarges his account of them at vol. ii. p. 143, and his very curious description concludes with the remark —that "the green cods of Eruile before they waxe hard, if they be stamped with their stalkes and leaves together, do colour and die the hairs of the head blacke;" 'for that colour,' it is added by Dr. Holland, quoting Alexander ab Alexandro, 'in old time, was best esteemed, and thereby chaste matrons were knowne from wanton harlots, who affected yellowe haire."—*Genialium Dierum Libri Sex;* lib. v, cap. 18; folio, Romæ, 1522; 8vo. 2 vols., Lugd. Bat. 1675.—This Ervum, Ervilla or Ervilia is a vegetable of the Vetch kind, in the Leguminous family of plants. It contains the nutritive principle for animals, in a valuable proportion; and it appears to be the herb to which Virgil refers, when he makes his poetical herdsman exclaim—"*Eheu! quam pingui macer est mihi taurus in ervo,*" where the Bull represents a herd of cattle, and the Vetch stands as the symbol of a pasture-field rich in nutrient herbage.—*Bucolica; Ecloga* iii, *v.* 100.

† *The Historie of the World, commonly called the Natvral Historie of Caivs Plinivs Secundvs;* translated into English by Philemon Holland, M. D. folio, 2 vols. London, 1634; Tome the second, p. 24. *Caii Plinii Secundi Historia Naturalis:* folio, 3 vols. *Parisiis*, 1723, *cum commentariis Harduini;*

When Augustus was suffering from another severe attack of disease, and immersion in hot baths had failed of relieving him, directions were given by Musa in concert with his brother Euphorbus, who also was a physician, to have the person of his illustrious patient freely subjected to the action of cold water in the form of ablution or affusion; according to the method, as Pliny* has it, of Musa

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lib. xix. *capiti octavo.* Here, the Naturalist describes several kinds of Lettuce; but, he observes, "the round kinde with smallest root and broad leaues is called *Astylis*, the chaste or ciuil Lectuce, howbeit some giue it the name *Eunuchion*, because of all others it cooleth most the desire of dalliance, and is an enemy to the sports instigated by the divinity to whom the myrtle was sacred." In a marginal note, Dr. Holland slily refers to Rhodiginus, and says—"Let him tell you why this Lectuce is called *Astylis*, by the women."—Ludovico Celio Richeri (*Rhodiginus*) was a learned Italian critic and commentator: he was born about the year 1450 and died in 1525: his work is intituled *Lectiones Antiquæ*; folio, Venetiis, 1516; Basileæ, 1566; Francofurti, 1666. Nearly two hundred years ago, Vossins expressed astonishment that a work so truly valuable should be so little known. Notions similar to those recorded by Pliny concerning the properties of Lettuce were entertained by Dioscorides and Theophrastus, by Callimachus and the poets, by most of the Arabian doctors, and by the earlier European herbarists. Quite generally, the patrons of "vegetable medicine" are eloquent in attributing to this plant an inherent power to over-rule the first and frailest of the phrenological propensities: but no one of the patrons ever surmises that the cause of the emperor's cure might, on their principles, also be the cause of his having no heir "of his own body begotten" to enjoy the imperial patrimony! Now, all this being true, it would appear that the "liberal" consumption of Lettuce, as an esculent endowed with sobering qualities, might deserve the countenance of Malthusian economists, and also prove not altogether unworthy of a "Regulation" subservient to the peripatetic philanthropy of the Poor Law Commissioners.

* *Historiæ Naturalis, Libri* xxv, cap. vii.—Another section of this immortal work exhibits an edifying illustration of the disingenuous selfishness with which the discoveries of science are too often beclouded by vain and shallow pretenders to originality. Although, with the co-operation of his brother, Antonius Musa had methodized the "*Psychrolusian System*," and made its efficient administration the means of restoring health to the most exalted personage then living; nevertheless, this system was revived by Charmis, a "talented and intellectual" prescriber, with the ostentation of a new discovery, after being neglected at Rome for nearly half a century on account of

and his brother, who "*instituere a balineis frigidâ multâ corpora adstringi,*" enjoined the bodies of invalids to be braced with copious applications of cold water, in or at the baths. Under this discipline, the case was conducted to a favourable termination, and the fruits of the doctor's "heroic remedy" were—the emperor's favour with munificent largesses, and honours in profusion.

As sketched by Suetonius,* this "medical transaction" and its results are instructive. He relates—that, throughout a long life, Augustus was subject to frequent and dangerous accessions of illness which often occurred annually, on his birth-day. His constitution became, in consequence, so greatly shattered as to require unceasing attention to his health, by suitable arrangements of diet, exercise, dress and regulated temperature. At his return from a Cantabrian expedition, he was afflicted with a disorder of the liver depending on congestion; and, on his despairing of recovery, he submitted to be treated by the system of Antonius Musa, which was then reckoned both hazardous and extraordinary. Hot fomentations† "*calida fomenta,*" having been used without advantage, by

its being felt an uncomfortable remedy, by the luxurious and degenerating citizens. Pliny's chapter on "Physicke and Physitians among the ancient Romanes" includes a lively sketch of this "medical gentleman," as one of "these new commers that can venditate and vaunt their owne cvnning with braue words." Thus, says the Natural Historian, while the astrological doctors seemed to command the destinies and to have men's lives at their disposal, "all on a sudden, one Charmis, a Marsilian, pvt himself forward and entred the citie of Rome, who not onely condemned the former proceedings of the ancient Physitians, but also pvt downe the baines and hot houses: hee brought in the bathing in cold water, and persuaded folke to vse the same euen in the middest of winter: nay, he feared not to give direction vnto his sicke patients for to sit in tvbs of cold water: and I assvre you my selfe haue seen ancient senatovrs, such as had been Consuls of Rome, all chilling and quaking, yea and starke againe for cold, in these kind of baines; and yet they would seeme to endvre the same, to shew how hardie they were: and uerilie there is a treatise extant of Seneca where he approues highly of this covrse. Neither is it to be doubted, but such Physitians as these, who hauing won credit and estimation by svch nouelties and strange deuises, shoot at no other marke bvt to make merchandize and enrich themselues euen at the hazard of our liues, and herevpon come these lamentable and wofull consultations of theirs abovt their patients."—*Ib, Book* xxix, chap. i, Tome ii, p. 345.

* *Caivs Svetonivs Tranquillvs, ex recensione Iohannis Georgii Grævii, cum notis Isaaci Casaaboni, Lævini Torrentii, Theodori Marcilii et aliorum: 4to. Trajecti ad Rhenum,* 1691; Lib. ii. sect. 59, 81; p. 215, 249.

† Fomentations, *fomenta,* consist in quickly repeated applications of a fluid to a circumscribed portion of the invalid's person. Anciently, as now, they were warm in most instances; but Suetonius here, and Pliny also, are

the counsel of other physicians, Musa caused them to be discontinued—substituting cold fomentations, whereby a cure was happily effected. With seeming gratitude for this achievement, but not without adulation of a liberal despot, a servile senate conferred on the emancipated healer of Augustus the distinction of having a statue of brass consecrated to his honour, and erected beside that of Æsculapius, whom the Roman people reverenced by the institution of divine rites and a devoted worship.

Dion Cassius communicates additional notices[*] relative to the fortunes of Musa, his "method," and his medical as well as civil preferments. Thus, when sinking under an inveterate disease, Augustus had renounced all hope of recovery, and made final arrangements with a view to his impending dissolution; and when he was unable to follow the course held to be indispensably requisite; Antonius Musa restored him to health with the use of cold lavations or ablutions, and cold potations or drinks. For this important service, the physician received ample pecuniary rewards,[†] both from his patient and from the senate: the privilege of wearing a gold ring[‡] *(for he was a freed-man)* was also conferred upon him; and he obtained exemption from imposts of every kind, not for himself only, but for the

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explicit in stating—that the remedial means prescribed by Musa were *frigida*, cold; and that they were *fomenta*, fomentations with cold water, distinguished clearly from *balneum* or *balineum*, general immersion in a bath. The "cold affusion" might have been employed in this case; or, probably it was treated with local sponging with the liquid at the cool or cold temperature.

[*] *Cassii Dionis Cocceiani Historiæ Romanæ quæ supersunt, curante H. S. Reimaro, græcè et latinè; folio, Hamburgi*, 1750; vol. i., p. 724—5.

[†] *Sestertium Quadringenties*, a bountiful Honarium! but, to determine here its precise amount in sterling pounds, would be to withdraw a pleasant exercise from the reader's calculating faculty.

[‡] The "*usus annuli aurei*" was a patrician privilege; it constituted the ornamental badge of nobility. Musa received this honour as a token of the Emperor's gratitude; and, out of respect to this physician, the right of wearing a gold ring was extended to members of the medical profession. Such a gewgaw, fair emblem of "Routinity," still occupies the place of an appendage to the garniture which deciphers the attainments of a "medical gentleman." Among the Roman institutions, there was a particular census which enjoined the rule, that a person must be a gentleman whose father and paternal grandfather possessed property worth £3229 3*s.* 4*d.* before he could claim the privilege of wearing a gold ring, or become an aspirant for the patent of nobility. Pliny instructed his countrymen in the "literature and science" of rings and coronets, in the first and second chapters of the thirty-third book of his *Natural History*. See also Arbuthnot's elaborate *Tables of Ancient Coins, Weights, and Measures, explained and exemplified in several Dissertations;* 4to, London, 1727, p. 176.

whole medical profession, in all time coming. Having related these facts, Dion strangely adds, with reference to the honoured physician, "but, it is right that he should be exposed who could arrogate to himself the work of fate and fortune: and so it happened that although Augustus had been recovered, yet when Marcellus* soon afterwards fell sick, the youth died notwithstanding he also was treated by Musa's method." Manifestly, however, this is a childish and unjust imputation; for, if Musa changed the previous to a contrary treatment; and if, under this treatment exclusively, the emperor was soon brought to health from "the gates of death;" then, by simple equity, the treatment and the cure ought to be regarded as cause and effect, while the merit of this should justly be ascribed to him who directed its cause, and not to "fate and fortune," inasmuch as he incurred the risk of its discredit, if he had proved unsuccessful.

By the same historian it is stated that, in certain quarters, Livia was charged with having procured the death of Marcellus, by poison; but it is stated further, this suspicion was rendered questionable by the fact that, for two years, the seasons had been so unwholsome as to generate diseases which proved fatal to a great multitude of persons. These diseases seem to have constituted an epidemic, with appearances resembling modifications of the Cholera, according to their general descriptions.

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* Taken altogether, Virgil's *Æneid* is a complete and splendid Panegyric on Augustus, and with this the poet dexterously mingles complimentary episodes in honour of his patrons and most valued friends. His elegiac verses on Marcellus have always met with universal commendation, for the delicate eulogy and affecting sentiment with which they are imbued. This accomplished prince was the son of Octavia, the sister of Augustus, who had adopted his nephew with the intention of bequeathing to him the imperial wealth and the Roman sovereignty. Marcellus married Julia, the emperor's daughter, who was soon thrown into widowhood by the sudden demise of her husband, in the eighteenth year of his age. His premature death occasioned great and unfeigned lamentation: and, for celebrating his virtues, the poet was rewarded with the most princely favour and munificence. When Virgil was reading his pathetic episode to Octavia with the sweetness, propriety and grace which distinguished him, the princess became intensely affected and shed abundance of tears; but, on finding the beautifully mournful panegyric appropriated to her son, whose name remained judiciously unmentioned till the close, she was overpowered with the "joy of grief," and sunk into a swoon. On recovering a little, Octavia ordered ten sesterces —upwards of eighty pounds sterling—to be given to the minstrel for every one of the twenty-seven verses which have immortalized the excellencies of a son whose melancholy destiny she deplored.—*Virgilii Æneidos, lib.* vi, v. 860—886.

After the manner of refined nations, the Roman court-physicians would enjoy the honour of prescribing for the more fanciful or fashionable of the courtiers; and so it was with Antonius Musa, who had Horace and Virgil for his patients, with the enjoyment of their confidence and affection. Addressing himself in an epistle to his friend Numonius Vala,* the former of these exquisite polishers of verse and manners mentions the circumstance as a novelty, that Antonius Musa had directed him to discontinue bathing in the warm springs of Baiæ as incapable of removing his disorder, and in their stead to use cold ablutions freely, even in the depth of winter. Virgil too has bequeathed to posterity a beautiful testimony of his esteem for Musa, enlivened with enthusiastic admiration of the virtues and excellencies that adorned his character. "Never," proclaims the Mantuan bard,† "never shall I meet with a man more estimable than Musa, or more amiable. Endowed with the best boons bestowed by the gods and givers of inspiration, surpassed he is not in love for the tuneful lore, nor in the enjoyment of all exquisite knowledge. Ever shall it be appreciated my greatest happiness to be beloved by Musa, the object of my devoted affection."

From the same inimitable poet, whose refined taste was always directed by the soundest judgment, Musa received another most elegant freewill-offering at the shrine of friendship, in being personated by

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* *Horatii Flacci Epistolarum, lib.* i, *Epist.* xv, *v.* 2—5.—From this epistle, it would appear that the liberal gentry of Baiæ were dissatisfied with Horace for preferring the advice of Antonius Musa to that of the "Spa-doctors" with their pleasant practice of bathing in thermal springs. He therefore determines on removing from the place; and, knowing the climate at Gabii and Clusium to be too cold in the winter, he requests his friend Vala to answer the questions—is the winter genial at Velia and Salernum; is the air healthy: what sort of people are the inhabitants; which is the readiest way to go thither; which of these two places abounds most in corn; how is their water; is it kept in cisterns, or are there plenty of wells; do hares and boars abound in these places; are the seas well-stocked with fish; have they plenty of cray-fish? As for the wine, be it good or bad, it will concern me little; to my taste a generous Grecian wine is the best; it drives away care, and inspires the heart with hope and gladness.—These precautions of the poet's may prove useful to unailing invalids, who sometimes happen to be particular in "engaging lodgings" at the watering places.

† *Publii Virgilii Maronis Opera, cum integris commentariis Servii, Philargyrii, Pierii; accedunt Scaligeri et Lindenbrogii notæ ad Culicem, Cirin, Catalecta; ad Codicem M. S. regium Parisiensem recensuit Pancratius Masvicius; 2 tomis, 4to, Leovardiæ,* 1717; vol. ii, p. 1307. Virgil's Epistle to Antonius Musa is one of the "Catalecta;" and, says Scaliger, it shews that this physician was a person *elegantissimi et politissimi ingenii* in the poet's estimation.

Iapis,* who treated the arrow-wound inflicted on Æneas, by an unknown hand in the fierce conflict which terminated the Lavinian war. When the hero was disabled by this accident, his attendants supported him, as he retired from the field to his tent, leaning on his long spear. Here, the anguished prince was received with prompt and dutiful solicitude by Iapis who forthwith entered on the operations requisite for the cure of the wound. On this occasion, however, the Healer's skill and zeal are unexpectedly thwarted by supernatural interference; for the gods had agreed that a miracle should confer a divine lustre on that scene which was to complete the beginning of the Latin name, and its glorious destiny. Whether therefore it be considered as a description of some ancient chirurgical usages, as an illustration of the styptic powers ascribed of yore to the Cretan Dittany,† or as expression of the poet's affectionate gratitude to his pious and illustrious friend, this instructive episodic scene merits unusual regard from the admirers of recondite and archæological investigation.

Among the earliest notices of Medicine, historical or traditionary, there are facts which support the belief that the flesh of Vipers was freely administered as an effectual remedy for the leprous, scorbutic, scrofulous and similar affections resulting from a degenerate constitution. Antonius Musa had recourse methodically to the same expedient, with astonishing success in the treatment of Ulcers which were deemed incurable: "that renowned physitian," says Pliny,* "having certain patients in cvre vnder his hand, for svch he prescribed them to eat Vipers' flesh, and wonderfull it was how soon he healed them cleane by that means.' At Rome among an inquisitive people, this method would naturally produce the effect of an extrordinary innovation; but, with the physician to whom it was peculiar, it must have emanated from his profound reflection on the experience of those barbarous tribes who regale themselves with the flesh of Vipers as an exquisite aliment. By its proper qualities, combined with the nutrition of fibrous structure, it exerts invigorating influences on the animal economy: it quickens the circulation of blood and the nervous energy, purifies the secretions, increases perspiration, and thus improves or renovates the constitution: so thought the doctors, of old.

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* *Virgilii Æneidos, lib.* xii, *v.* 391—429.—All his writings shew that the principle of friendship glowed in the mind of Virgil with a pure and inextinguishable fervour; and the evidences which prove that he designed to frame an acceptable character of Augustus in the one he assigns to Æneas, are equally applicable to the conclusion, that he was desirous of honouring his favourite Musa—*ante alios carior, dulcior, doctior, jucundior*—by the amiable and excellent personal as well as professional attainments he ascribes to Iapis in the admirable episode where this generous and enlightened physician is introduced. Who was the prototype of Virgil's Iapis? As a proposition, this is discussed with great ingenuity to a regular consequence, by Bishop Atterbury, in an essay intituled *Reflections on the Character of Iapis in Virgil; or the Character of Antonius Musa, Physician to Augustus*: it forms one of the bishop's miscellaneous tracts, and is inserted in Warton's edition of the Works of Virgil; vol. iv, 257—276. Iapis means generally the *Healer*: it is a poetical term constructed from the Greek verb 'Ιάομαι, *medeor*, to heal, to cure diseases and wounds: from the same source are derived 'Ιατρὸς, *medicus*, a physician, and *Archiater*, the "physician in ordinary to the king," emperor, or sovereign of a state.

† This is the *Origanum Dictamnus* of the Linnæan system. From the remotest antiquity, both gods and men held this plant in the highest estimation as an infallible vulnerary, from its reputed powers of restraining hæmorrhage and hastening the cure of wounds. Gathered on Mount Ida, and conveyed with divine velocity, the Dittany formed a prime ingredient in the panaceated fomentation prepared by the "Goddess-mother," and charmed by her into the inconscious hand of the Healer, who discovered its source by its effects, and piously acknowledged the miraculous energy.

This practice of Musa's was resumed by Galen† and Aretæus, about two hundred years afterwards; and, to very recent times, it has been in use under various modifications. Nearly cotemporary with him, was Craterus, an Athenian physician, who, according to a relation of Porphyry's,* accomplished the cure of one of his servants by directing him to use the flesh of Vipers dressed as fish, for his ordinary food. It is stated by Lopez† for a fact to which he accords his belief, that the people of Congo esteem the Viper as a most delicious article of food: they prepare it by roasting, and devour the viands with a gluttonous zest. From a perfect acquaintance with its qualities, the natives of Tonquin‡ are accustomed to regale their friends with arrack wherein the bodies of Snakes and Vipers are infused. No long period has elapsed since the physicians of France and Italy were in the habit of prescribing broths and jellies composed of Vipers' flesh, for the purpose of purifying the blood when tainted or exhausted by diseases. Now, if the virtues of these reptiles when prepared for food or medicine, are strengthening and restorative, why should they be disused as a remedy? Who knows that the scrofulous poison could not be extinguished with liberal draughts of a generous "Viperine wine?"

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* Holland's *Plinivs' Natvral Historie*, the thirtieth Book, chapter xii.; voll. ii. p. 394.

† There is an amusing if not edifying natural and medical history of the Viper, with illustrations from ancient and modern authorities in the "*History of Four-footed Beasts and Serpents;* interwoven with a curious variety of historical narrations out of the scriptures, fathers, philosophers, physicians and poets; collected out of the writings of Conrad Gesner and others, by Edward Topsel; folio, London, 1658; p. 799—810. In the volume of his immense Natural History, which contains his "*Serpentum et Draconum Historæ libri duo, folio, Bononiæ*, 1640," Aldrovandi has a comprehensive chapter on the Viper; and in this, he treats of the Reptile's various names, synonymes and their etymology, kinds and diversities, figure and description, physionomy and anatomy, nature and propagation, sympathy and antipathy; the situations it haunts; its food and temperament; methods of dislodging and capturing it; peculiarity of its poison and the symptoms it produces, with the remedies; treatment of cattle bitten by the viper; precautions against its venom; its epithets and appellations; moral drawn from its habits; próverbs and miracles connected with its history; its use in hieroglyphicks, coins, emblems and symbols; its employment in "phrenoschemes;" its monstrosities; its figurative representations; and its uses as food and physic, and in the composition of drugs: p. 108—167.

Musa enjoys the reputation of a medical botanist, derived from the singularities of a tract on the properties of the Herb Betony§ and it applications. Very reasonable grounds are assigned for bestowing the merit of this production on the imperial physician, but it has also been conferred on Apuleius* the phytologist, whose Book on the Medical Virtues of Vegetables it frequently accompanies. Hence in modern times, has arisen a bibliological discussion attended with a display of erudite argumentation, unencumbered with the shew of one single fact, for maintaining as well as resisting the pretension, that the monograph "*De Vetonicâ*" was composed by Apuleius, whose distinct personality remains undetermined. Could, however, the writing be fairly disembarrassed of the blemishes, improvements or ornaments imposed upon it by successive transcribers, it would be found not destitute of appearances confirming the probability of its having originally been an epistle, the result of a recreative exercise, addressed by Musa to Marcus Agrippa, the son-in-law and heroic friend of Augustus, and truly patriotic favourite of the Roman people.

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* *Porphyrius: De Abstinentiâ ab Esu Animalium, græcè et latinè;* 8vo. *Cantabrigiæ*, 1655. Craterus was physician to Pomponius Atticus, the friend of Cicero, who speaks of him with great respect in his correspondence. *Letters to Atticus;* Book xii. Epist. 13 and 14.

† *Reporte of the kingdom of Congo, a regione of Africa;* drawen out of the writinges and discourses of Odoardo Lopez, a Portingall, by Philippo Pigafetta; translated out of Italian, by Abraham Hartwell of Cambridge, 4to. London, 1597.

‡ This account rests on the authority of Dampier, in his Voyages, and on that of other travellers who had acquired a knowledge of the Tonquinese customs, by personal observation. Many interesting particulars relating to the country and its inhabitants will be found in the work of Alexander de Rhodes, bearing the title, *Tunchinensis Historiæ libri duo;* 4to. *Lugduni*, 1652; or in its French translation by Henry Albi, published at the same place in the same year; or in the work of Tavernier's translated by Edmund Everard and intituled "*Voyage to Tunkin and Japan, with figures;*" folio, London, 1680; or in the same author's original "*Voyages en Turquie, Perse et aux Indes,*" 3 vols. Paris, 1679.

§ Some chroniclers will have it, that Apuleius the phytologist could be no other person than Apuleius Celsus, a physician nearly cotemporary with Antonius Musa: others argue that the herbalist was himself the identical Apuleius of Madaura who composed, at a period later by one hundred and fifty years, the famous *Golden Ass* with its magical fictions; and, it is to such an Apuleius, that certain bibliographers would transfer the merit of

Musa's *Herba Vetonica* is the Wood-betony; and, in his mind, it possesses energies available in the treatment of forty-six different diseases. Hence came the Italian compliment "*ha più virtù che Bettonica,*" you have more virtues than Betony; and hence the adage, "*vende la tonica é compra la Bettonica,*" sell your coat and buy Betony. Until fashion had inspired a taste for occult and outlandish

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having aspired to describe the Betony and its salutary properties. Between the Monograph on Betony, however, and the Apuleian Herbal with its cxxviii plants, there is this essential and characteristic distinction—that the former consists of simple and precise directions harmoniously accordant with the spirit and experience of the times when Musa was eminent as a physician, while the latter has its precepts entangled with the rubbish of many superstitious injunctions.

* Pliny's praises of Betony, in the style of his translator, are tinctured with extravagance, the offspring of a benign credulity. "Surely," he says, "an excellent herb this is, and aboue all other simples most worthy of praise. The leaues brought into pouder, be good for many vses: there is a wine and vineger condite with Betony, soueraigne for to strengthen the stomack and clarifie the eiesight: this gloriovs prerogatiue hath Betony, that look about what hovse soeuer it is set or sowed, the same is thovght to be in the protection of the gods, and safe enovgh for committing any offence which may deserue their vengeance and need an expiation or propitiatory sacrifice." *Natvral Historie*, Book xxv, chap. viii.—Musa's Tract, "*De Herbâ Vetonicâ, deque nominibus ejus et virtutibus,*" has been often published in medical collections, as that of Albanus Torinus, folio, *Basileæ*, 1528 and 1549; that of Gabriel Humelbergius, 4to, *Tiguri*, 1537; that with the title "*Medioi Antiqui Omnes,*" folio, *Venetiis*, 1547; and that of J. C. G. Ackermann, 8vo, *Norimbergæ*, 1788, in which it is made the first chapter of Apuleius' *Phytography*. It is described in the *Bibliotheca Botanica* of Seguier, 4to, *Hagæ-Comitum*, 1740, p. 283; and in that of Haller, 4to, *Tiguri*, 1771; Tom. i, p. 63.

physic, the plant preserved the reputation conferred on it by Musa; and, for more than eighteen centuries, it has been valued for its efficacy as a medicinal agent, in the same cases as those wherein this experienced physician recommended its employment. Thirty-nine of his prescriptions are introduced into "the first printed botanical work[*] of any consequence or popularity in England," in the shape of a translation characteristic of the language early in the sixteenth century. They may be exemplified: thus, "agaynst feuer quartayn, thre dragmes of this powdre of Bethonie and an vnce of Baccatū laury or Bay beryes, with thre cyates of warm water, gyuen to the pacyent before the houre of his axces, heleth him wōut grefe." Likewise,[*] "agaynst podagre, take water that Bethonie is soden in and drynke it often, and lay the herbe playsterwyse vpon the fete, it appeaseth ye payne" of gout "meruaylously as they say that haue proued it." Prolonged and various attention to the operation of this plant as a medicine and to its effects, has enabled instructed observers[†] to limit its exhibition, and to define the sphere of its usefulness. Tried in this way, it may now be considered as a mild, warm, aromatic bitter, which, in an electuary or infusion, acts as a pleasant alterative, tonic, or aperient, according to the form or composition under which it is administered.

Another subject engaged the philanthropy of Musa: this was an essay on the Prevention of Disease,[‡] forming a sketch of the rules whose observance is indispensable to the conservation of health. Admonitions without end, and volumes without number, have solicited the concern of mankind for this most important study, with all kinds of earnestness and affection, ever since the days when the "Freedman of Augustus" endeavoured by the precepts of experience to preserve the vigorous Roman constitution from the depravement of an infectious and malignant luxury. Such Rules are simple and intelligible; and wise is the man who strives to repeat them with prudent firmness, so as to ensure the benefits of their habitual application. Temperance in diet, suitable garments, moderation in sleep, proper exercise, necessary amusements, with the right degree of active benevolence and of equanimity hallowed by religion—these are the everlasting elements of health and the safeguards of happiness.

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[*] *The Grete Herball*, whiche geveth parfyt knowledge and understandying of all manner of Herbes and there gracious vertues; folio, London, 1526.—The arrangement is alphabetical.

[†] Dr. Charles Alston's *Lectures on the Natural History of Drugs, their virtues and doses*; two volumes, 4to, London, 1770; Vol. ii, p. 88.—Mr. William Meyrick's *New Family Herbal*, enumerating the vegetables that are remarkable for medical efficacy, with an account of their virtues; 8vo, Birmingham, 1790; p. 41.

[‡] This appears under the form of an Epistle addressed to Mæcenas; it was published at Norimberg, in 1538, with a title shewing it to contain Musa's directions—*De Sanitate Tuendā*, or the Art of Preserving Health. He wrote several books, *plures libros;* but, with exception of the two fragments previously mentioned, they have all perished amid the "ruins of empires" and the barbarities which paralysed the ancient advances of European civilization. Galen distinguished him as the best authority on the composition of medicines, and strengthens this judgment with numerous illustrative selections from works of Musa's, then existent. He was accustomed to prescribe the *Cichorium Intybus*, or Wild Succory, a beautiful and efficient herb, for diseases of the liver attended with jaundice, and his practice might still be imitated with safety and success. Another of his vegetable remedies was derived from the *Male* and *Marsh* Ferns, and he depended on its activity for

MUSA *the Plant*.—Naturalists have exercised a laudable industry in recording a nomenclature* of the Musa, in most dialects of the

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the dispersion of visceral congestions. Pliny was conversant with the peculiarities of Musa's method; and, in Book xxvii, chapter ix, of his *Natural History*, he specifies concisely the varied intentions wherewith these plants were exhibited. "There is no vse of physicke of the Ferne-roots," he says, "but when they be ivst two yeres old; for both before and after that time, they serue for no purpose. Taken in this their season, they do expell all kind of uermin out of the guts; with honey, if they be broad and flat wormes; but in some swete wine for all the rest, whether they be round or small, so that the patient continve this drink three daies together. Both of them are very contrarie to the stomack; howbeit they purge the belly and evacuate choler, then waterish humovrs; bvt the better do they chase the forsaid flat wormes out of the body in case they be quickened with the like quantitie of Scammonie. The pouder of Ferne-roots is singvlar to be strewed vpon maligne vlcers; yea, and vpon the farcins and sores in horse necks: the leaves kill Punaises or Wallice, and a Serpent they will not harbovr; and therefore it is good for those who are to lie in svspected places, to make them pallets of Ferne-leaues, or at leastwise to lay them vnder their beds: the very smoke of them also, when they be burned, doth chase away Serpents." Here then, aged seventeen hundred years, is the prototype of Madame Nouffer's celebrated vermifuge which Louis XVI purchased for seven hundred and fifty pounds sterling—a princely oblation at the altar of pure philanthropy.

* From immemorial time, this plant has been designated *Mus*, *Muza* and *Amuza* indiscriminately, by the Arabian physicians: the Persians call the tree *Daracht Mous*, and its fruit is denominated *Mous*, in their language. Most of the appellations by which it is known in the various countries where it was first discovered by Europeans to be of spontaneous growth, are enumerated, from Oviedo 1526, Bruchard 1554, Thevet 1558, Garcias ab Horto 1567, Christoval a Costa 1578, and De Lery 1578, by Charles L'Ecluse (*Clusius*) in his *Exoticorum Libri Decem*; folio, Lugd. Bat. 1605; p. 229, 230,

lands where the plant is indigenous; and those botanists who entertain the curiosity or desire of making themselves conversant with the literature and glossography of their science, are furnished with an ample and fruitful sphere for research and experience in the polyglot denominations of this herb, and its history.

As a generic head, the Musa confers its appellation on a group of exotic vegetables which have ever been regarded with a natural partiality, on account of the grateful and exhilarating sustenance afforded by their fruits, to the inhabitants of sunny regions. This group constitutes the *Musaceous Family,* comprising four genera, the first of which includes five species—*Musa paradisiaca, M. sapientum, M. ensete, M. trogloditarum,* and *M. textilis,* all agreeing in the kind, but differing in the importance, of their uses and economy. The last is particularly valued for its delicate fibrous structure, from which some of the finest Indian muslins are fabricated.

With the most erudite philologers, the Musa is that vegetable which figures prominently in the genuine picture of longing, as distinguished from coveting, so well delineated by the divine limner in his scene of the Mandrakes—a sketch quite graphically descriptive of the earliest patriarchal and oriental customs. Here the distinctive epithet is significant of number and exuberance: it is *Dudaim,* a plural term denoting the Plant of plants with its fruit enclustered, refreshing and nutritive. By scholiasts on the Inspired Scriptures, this most mystical word is variously rendered—Mandrakes, Citrons, Lilies, Jasmines, Violets, Figs, Mushrooms, odoriferous blossoms, flowers of loveliness, or "amatorious philters;" and, though the first of these versions enjoys a general acceptance, yet the knowledge of this vegetable's economy and qualities shews its inadequacy to represent the *Dudaim,* to the minds of intelligent naturalists.

Instructed by observation and study during his extraordinary adventures, the indefatigable Wieland* was among the first to advo-

252, 283: by Bauhin and Cherler in the *Historia Plantarum Universalis;* folio, *tribustomis, Ebroduni* 1650; *Tom.* i, p. 148—141: and by Bodæus a Stapel, in his edition of *Theophrastus de Historiâ Plantarum, græcè et latinè;* folio, Amstelodami, 1644; p. 352—3.

* Melchior Wieland, M.D., latinized *Guilandinus,* was a native of Konigsberg, a respected physician, and an enthusiatic botanist. Having projected an excursion into Africa and Asia, for the purpose of exploring and studying the natural history of regions distinguished for the wonderful diversity, beauty and magnificence of their vegetable productions, he was captured by Algerine corsairs, and by them consigned to a tedious and detestable bondage. From this, at length he was redeemed by the divine benevolence of Gabriel

cate the probability, that the Musa with its luscious clusters might be the proper *Dudaim* which tempted Rachel to indulge the fancy of a devious imagination. Allied to this, was the judgment expressed by Job Ludolph, whose immense learning exalted his philosophy, the fruit of foreign travel and contemplation. His account of the Abyssinian* vegetable productions comprises the remarks—that "the Indian-fig, which the Arabians call *muz* or *mauz*, grows plentifully here, and a most excellent fruit it is: you shall have fifty figs about the bigness and shape of a cucumber hanging upon one stalk, of a most delicious odour and taste. They are ripe in June: near Damascus they are rare, for they require a hotter climate. These circumstances make me believe that this same fruit may be the DUDAIM mentioned in Genesis, which occasioned so much discontent between Jacob's two wives. Soon after, I observed that many learned men had lighted upon the same conjecture, though they do not give their reasons. My opinion is, that it should be some rare and pleasant fruit that could have moved the boy to gather it; yet not so much a boy

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Fallopio, M. D. of Padua, whom the ransomed and grateful philophytist succeeded in the professorship of Botany, in the university of that celebrated city. His writings attest his learning and his zeal for the advancement of that science to which his best energies were devoted. His observations on the most remarkable exotic plants and their nomenclature, are embodied in his *Epistolæ de Stirpium aliquot Nominibus vetustis ac novis, quæ multis jam sæculis aut ignorarunt Medici vel de iis dubitarunt:* 4to, *Basileæ*, 1557.

* Job Ludolph stands high on the roll of eminent German philologers: he was born at Erfurt in 1624, and he died in 1704, in the enjoyment of well-merited distinction as a linguist, an antiquary, a traveller, a grammarian and an oriental scholar. He was the author of more than a dozen of curious and valuable works, among which were, an Amharic grammar, an Ethiopic grammar and dictionary, and the *Historia Æthiopica, sive descriptio regni Habessinorum quod vulgo male Presbyteri Johannis vocatur; folio, Francofurti ad Mœnum*, 1681. This interesting volume was translated into English and published, folio, London, 1682: it is illustrated with engraved figures, and the best of these is a graphic representation of the *Musa sapientum*, the Banana, here denominated "the Herbe and Fruite called in Hebrew DUDAIM, and in the Arabic language MAUZ or MUZA, the Indian figge:" and the plate exhibits "the herbe itself growing like a tree; the ripe fruite, with forty or fifty figges upon one stalke: one figge in its full proportion; and the young shootes that spring from the root of the tree every yeare." There is another tree which the traveller praises as "most excellent against worms in the belly, a distemper frequent among the Habessines by reason of their feeding upon raw flesh, and for remedy whereof they purge themselves once a month with the fruit of this tree which causes them to void all their worms."

neither, as to think it worth his while to carry home a stinking* mandrake. Besides, Rachel might have sent a servant to gather amiable flowers, that is to say Lilies, Violets, or the like: moreover, the Hebrew word seems to confirm this opinion, as being in the dual number, and thus implying a relation of more than one fruit to one and the same stalk."—The same author mentions another plant belonging to the *Musaceous* family. But, he observes, " the tree that goes by the name of *Ensete*† is not to be passed over without admiration; being like that which bears the Indian fig, two fathoms in thickness. Being half cut down, it renews itself again by means of innumerable shoots that spring again from the remaining trunk, all which is fit to be eaten; so that there is no need that the tree should bear any other fruit, it being all pot-herb of itself. Being sliced and boiled, it assuages the thirst of the common sort of people, who bruise the leaves and boil them with meal, and then eat the composition instead of a hasty-pudding." Another writer,‡ remarking on the Mandrake and its virtues, confirms the historian's opinion. He notes, that " when the Male Mandrake is ripe in July, it contains a golden coloured fruit as big as a pear-maine, which yields a whitish flat seed that affects the nose with a narcotick stuffing odour. By its hogo and fœtid scent, it must have a soporiferous nature: it is never used inwardly, but passeth for one of the poisonous class of vegetables. Lemnius* tells us, how being seated in his study, a sudden drowsiness seized him, caused by a Mandrake-apple he had laid on a shelf." He next proceeds to shew that, in the flowers which Reuben brought home, there must have been "a delectable smell;" and then he concludes that, "for any one positively to affirm these lovely flowers were Mandrakes, is too magisterial and singular an opinion: 'tis likely the young child would be more fond of the delicate and sweet flowers of the field than of ill-scented and immature apples; therefore, it rather appeareth to me that he brought to his mother some other vegetable than Mandrake."

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* Dr. Hasselquist remarks, that the Arabs of Galilee call the Mandrake by a name which signifies the *Devil's Victuals,* in their language.—*Travels in the Levant;* 8vo, London, 1767; p. 160.

† This appears to be the plant which Bruce, the well-known Abyssinian traveller, proposed to introduce as a species into the Musaceous family. We learn from his observations, that its fruit is disagreeably bitter in its natural state; but that, when prepared according to the fashion of the country, it makes a most wholesome and nutritious aliment, yielding a savour like the taste of cheese.

‡ This view of the question appears in a rare little Treatise, evincing a spirit of modest christian piety and bearing the title " THEOLOBOTANOLOGIA *sive Historia Vegetabilium Sacra;* or, a Scripture Herbal, wherein all the trees, shrubs, herbs, flowers and fruits mentioned in the Holy Bible are rationally discoursed of; by William Westmacott, of Newcastle-under-Line, physician; 12mo, London, 1694, p. 105—108.—Adrian Cocquius, in his learned and curious *Contemplations on the Sacred Phytology,* enters into a formal disquisition upon the same subject; and, by a systematic induction, he arrives at the conclusion—that the *Dudaim* positively does not signify Mandrakes, but is "*pomum et malum aureum,*" a golden coloured apple, or apple-like fruit—a description not inappropriate to that of the Banana or Plantain-tree and its luxurious clusters. See his *Historia ac Contemplatio Sacra plantarum, arborum et herbarum quarum fit mentio in Sacrâ Scripturâ;* 4to, *Vlissingæ,* 1664, p. 190—200.

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* Lievin Lemmens, in latin *Levinus Lemnius*, relates this anecdote with due solemnity, in his remarks on the nature and properties of the Mandrakes which Rachel obtained by coaxing, "*eblandita est*," from Leah her sister: it forms the second chapter of his singular but not uninstructive book, *Similitudinum ac Parabolarum quæ in Bibliis ex Herbis atque Arboribus desumantur dilucida explicatio*; 12mo, *Erphordiæ*, 1581, with a good portrait of the author, in a wood-cut, on the title-page. There is an English version of this, intituled, *An Herbal for the Bible*; containing a plaine and familiar exposition of such similitudes, parables, and metaphors, as are borrowed and taken from Herbs, Plants, and Trees, by observation of their vertues and effects; by Thomas Newton; 8vo, London, 1587. Lemnius makes a cursory observation on the efficacy of Reuben's Mandrakes, in another production of his which is still more extraordinary. It is an elaborate treatise—*De Occultis Naturæ Miraculis*; 12mo, *Antverpiæ*, 1559—with many subsequent editions and translations. That into English is anonymous—*The Secret Miracles of Nature*; treating of Generation and the parts thereof; of the Soul and its immortality; of Plants and living creatures; of Diseases, their symptoms and cure; and many other rarities not treated of by any author extant, by that famous physitian Lævinus Lemnius; folio, London, 1658. At p. 262, the proposition is affirmed "that plants are of both sexes," and this is accompanied with the remarkable assertions, that "amongst herbs of the same species there is a difference of the sex, for there is a conjunction between them and a kind of matrimonial society, and hence it is that some plants are called the male and others the female. The Arabians say that the females will not bear without the males, the flowers and down of them, and sometimes the powder and dust, being strewed upon the females; wherefore plants that have a vegetative faculty, do send a generative force and vital spirit one into the other, and that by a secret consent of Nature and a hidden inspiration derived from the heat of the air and the sun and the generative spirit of the world." Now, to Cesalpino, 1583, and after him to Zaluzi-ansky, 1592, is assigned the credit of being the first among the moderns to speak about vegetable sexuality: here, however, are the statements of a physician who, in 1559, discourses on the "Sexes of Plants" as on a well-known and established doctrine. Dr. Lemmens practised as a physician at Ziriczee, in Holland; but, under grief for the death of his wife, he went into the church, and died in 1568: his numerous writings are vigorous and elegant, and they enjoyed an extensive popularity. His translator, Dr. Thomas Newton was a native of Cheshire; and, in Biography, he is represented as having been a schoolmaster, poet, divine, and physician; he died in 1607: his English versions of foreign literature were numerous.

Ancient herbalists generally impute ungenial and narcotic properties to the Mandrake, with a prompt tendency, through decomposition, to become the source of ill-scented and deleterious emanations. With the Banana and Plantain-tree, it is altogether the reverse: their fruit is not less beautiful to the sight; its fragrance is more grateful to the smell, and its savour is more delicious to the taste, than that of the Mandrake. From such reasons, and others drawn from the comparative economy of these three vegetables, with the manifest inexistence of even one fact to shew that Rachel's longing for her sister's pleasant fruits was created by any other motive than admiration of their visible and sensible qualities, the conclusion is probable—that the translation which represents the *Dudaim* as a *Banana* or *Plantain-tree*, is the version which most faithfully preserves the word's original signification.

Were the Mandrakes of Reuben,* the Grapes of Eshcol, and the sweet-scented Mandrakes of the Prince's daughter, to be considered as clusters of the Plantain-tree or the Banana, the records of these would then stand for the first authentic notices of the *Musaceous* family and their delicious fruits. When the Macedonian soldiers returned from Alexander's Indian expedition, their tales of marvels concerning sights and deeds did not form an exception to the displays of pleasant fiction next to inseparable from the stories of romantic or chivalrous adventure. From this source of popular information, the Greek and Roman naturalists procured the elements of those sketches of theirs which originally introduced the *Musaceæ* to a place in European literature.

Theophrastus had acquired an extraordinary consideration, as the successor to Aristotle and as an eloquent teacher of ethical science and phytology, at the time of Alexander's enterprize against the people of the east; and, having survived this magnanimous aggressor for thirty years, the physiologist had fair opportunities of procuring information from his travelled countrymen, regarding the Natural History of those kingdoms on which they had inflicted the miseries of a stern and romantic depredation. From communications thus furnished, he evidently drew the account of Indian trees, preserved in that most ancient botanical scripture which elevates him as the Father of Phytography to the applause and veneration of all posterity. His descriptions certainly, though sketchily, represent the first defined* and the most valued of the musaceous family; and they were adopted with an enduring faithfulness and happily enlarged by the pencil of Pliny, whose philosophical concupiscence was exquisite and insatiable.

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* Genesis xxx, 14, 15, 16: Numbers xiii, 23, 24: Solomon's Song vii, 13.

Dr. Holland's version of Pliny, Tome ii, p. 361, leads him to say, "a tree there is in India bearing a very fair, big, and sweet fruit, and thereof the sages and philosophers do ordinarily liue. The leafe resembleth birds' wings, carrying three cubits in length and two in bredth. The fruit it pvts forth at the bark, hauing within it a wonderfull pleasant iuice; insomuch as one of them is sufficient to giue four men a competent and full refection. The tree's name is *Pala*" (still *Palan* in the Malabarian dialect) "and the fruit thereof is called *ariena*. Great plenty of them is in the country of the Sydraci, the utmost limit of Alexander the Great his expedition and voiages. There is another tree like to this, and it beareth a fruit more delectable than this arena, howbeit the bowels in a man's belly it wringeth and breeds the bloodie flux," being taken to excess and without judgment. "As for the Macedonian souldiers, they talked much of many other trees, but in general tearmes only, and to the most they gaue no names at all." Similar effects still continue to be experienced by Europeans, when they indulge overfreely in using the pleasant fruitage that tempts them to intemperance, on their first visiting the climates where it is indigenous.

Next came the Arabian doctors, expatiating on the properties of the Plantain-tree and the Banana, with little regard to discrimination. Inditing his experience, Avicenna† affirms that their fruit yields little nutriment; that it tends to generate an excess of bile and phlegm; and that, although it disturbs the stomach, it does good in inflammation of the chest and lungs, and excites renewed activity of the kidneys when these have become inert: Rhazes* expresses the like sentiments, and adds that it moderates appetency, proves laxative, and assuages irritation of the throat: and, by Serapion,† it is pronounced to be one of the best calefacient and diluent remedies in existence, while he maintains the importance of all the properties ascribed to musaceous fruits, by his medical compatriots. These were followed by the latinists, arabists, herbalists, phytologists, and others, who essayed to make the advantages of foreign travel conducive to the "philosophy of plants." Hence proceeded many descriptive and graphic representations of the chief *Musaceæ*, and thus their alimentary and medicinal energies have been methodically discriminated.

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* Theophrastus leaves them altogether without names: he says, "In India, there is a fine large tree remarkable for the size and delicacy of its fruit; the native ascetics, who live naked, use it for their sustenance: there is another with leaves as long as the Ostrich-feathers worn on military helmets: and there is a third, having long inflected fruit which is delightful to the taste, but occasions flatulence and disorder of the bowels."—*Theophrasti Eresii Historia Plantarum, Græcè et Latinè, cura Johannis Bodæi a Stapel; folio, Amstelodami*, 1644; p. 347.

† Abu Ali al Hossain Ebn Abdallah Ebn Sina, corrupted by the latinists to Avicenna, ranks as the highest authority with the Turkish, Arabian, and Persian physicians. He describes the *Musa* in the second book of his *Canon Medicinæ*, as translated into Latin from the original Arabic, by Gerard of Cremona; folio, Papiæ, 1483. This Canon is a sort of medical encyclopedia,

Regarding the magnificent plant, *Musa paradisiaca*, it grows naturally and is cultivated extensively throughout the tropical regions of Asia, Africa and America, for the beauty of its umbrageous foliage and the abundance of its excellent fruit. From a fanciful notion, that the terrestrial Paradise was stocked with the Plantain-tree, its specific name, *paradisiaca*, was originally devised; and, for the sake of its euphony, let no reason arise to require its discontinuance.

From times untold by history, the gymnosophists or "wise men of the east" have been accustomed to seek retirement in solemn groves, overshaded and scented by the banana, whose fruitage yielded full subsistence to these recluses, while they engaged unseen in their feats of self-inflicted severity or in the contemplation of artifices for secur-

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in which the simples are arranged in alphabetical order. After experiencing many vicissitudes of fortune, this celebrated person died in A.D. 1036, at Hamadan, where the ruins of his tomb are still pointed out to inquisitive strangers.

* Mohammed Ebn Secharajah Abubeker Abrasi *(Rhazes)* acquired a high reputation at Bagdat, both as a teacher of the medical sciences and as a physician. His observations on the *Musa* are given in the twentieth chapter of the third book of his work, intituled *Almansor*; *hoc est, Ad Regem Corassani Mansorem Libri decem; folio, Venetiis*, 1510. He visited many foreign countries, and died in the eightieth year of his age, about the beginning of the tenth century.

† John Serapion was an eminent Arabian physician, who flourished during the last half of the tenth century. He treats of the medicinal properties of the *Musa*, in the eighty-fourth chapter of his collection, having the title, *Practica sive breviarium; folio, Venetiis*, 1479. This is a composition from the Greek and Arabian physicians, upon the natural history and virtues of medicines.

ing the dominion of a spurious sanctity over the weakness of unenlightened and superstitious veneration. When this tree, seeming every way "good for food, and pleasant to the eyes," and dispreading a delightsome shade for sages desirous of appearing wise—when this tree first presented itself to the observation of ancient naturalists, the pupils perhaps of Aristotle, they would readily designate it Δενδϱον Σοφων the wisemen's tree, a specific appellation now in Musa *sapientum* hallowed into established usage by the sanction of the highest botanical authorities. By the priests who administered the primitive Egyptian mythology, the banana-leaf had an exact signification in the symbolical circle of foliage which denoted the eternity of God, and was intended by its mystery to eleviate the minds of His worshippers to meditation on His divine attributes as the uncreated Creator and providential Ruler of the universe.

SKETCHES OF EUROPEAN ORNITHOLOGY.

GOULD'S "BIRDS OF EUROPE."

PARTS XIII. AND XIV.

PART XIII.—On opening the present part of Mr. Gould's series, we are greeted by a pair of our old and familiar friends the Reed Buntings, *Emberiza schœniculus*,—Bruant de-roseau, *Fr.*—Zivolo di padule, *It.*—Rhorr Ammer, *G.*,—though, in truth, we scarcely think justice has been done them in the figures, which give the idea of much too bulky and heavy birds. The male is very fair, but at the same time his characters are so striking that the merest daub would suffice to render him recognisable. The male of this species, it is well known, only acquires his full beauty with the spring of the second year. The female and young, according to authors, are similar, but every practical ornithologist well knows how to distinguish them.

Barred Ulule, *Ulula nebulosa*,—Chouette nébuleuse, *Fr.* A spirited figure, by Lear, representing an adult male rather less than the natural size. It is not one of Lear's best. Rarely occurs further south than Scandinavia, where it is very scarce. Distributed throughout the U. S. where, says Audubon, his cry may be heard in the evening, resounding from every part of the forest. "Mr. Audubon further remarks, that its powers of vision during the day seem to be very equivocal, he having seen one alight on the back of a cow, which it left so suddenly, on the animal moving, as to leave no doubt on his mind that the Owl had mistaken the object upon which it had perched for something else." Feeds on young Hares and Rabbits, Mice, small birds, Frogs, Lizards, &c.—Lays, in the holes of decayed trees, or the deserted nests of Crows and Hawks, from four to six pure white rounded eggs. The male is somewhat smaller than the female, and the intensity of the tints varies considerably.

Hazel Gelinotte, *Bonasia Europœa,*—Tétras gélinotte, *Fr.*—Francolino di monte, *It.*—Schwartzkehlige Waldhuhn, *G.* Lovely figures of a male and female, natural size. " The half-plumed tarsi, the crested head, and the tuft of feathers on each side of the neck, are features peculiar to the genus *Bonasia ;* in the present species, this latter character is but slightly indicated, but is exhibited to a greater extent in a species from America. *B. Europœa* is the only species yet discovered in the old world, but it has its representative in the new, in the well-known *B. umbellus,* &c. Although the Hazel Gelinotte does not equal the Ptarmigan in flight, its powers in this respect are far from being inconsiderable. They frequently perch on trees, and love to dwell in wooded plains skirting hilly and mountainous districts ; they feed on alpine fruits and berries, to which are added the tops of Heath, Fir, Juniper, and other tender shoots. They fly off in packs or companies, and are not so shy or distrustful as most other members of this family ; when disturbed they perch on trees, and are then easily approached and shot.—The Hazel Gelinotte is dispersed over the continent of Europe from north to south, inhabiting nearly all the elevated ridges and natural boundaries of the different countries. Dr. Latham states that they are so abundant on a small island in the Gulf of Genoa, that the name of Gelinotte Island has been given to it. It also inhabits France, Germany, Sweden, Norway, and Russia, thus extending from the sultry regions of Italy to the limits of the arctic circle." Is never met with in Britain, and appears to be exclusively confined to the European continent. The eggs are from ten to twelve, rusty red, spotted with a darker colour, and are laid on the ground, at the foot of a Fern or Hazel-stem. The female, besides being less brilliant in tints than the other sex, wants the red naked skin behind the eye.—This bird "is held in high esteem for the table, for which purpose thousands are yearly captured."

Sedge Reedling, *Salicaria phragmitis*,—Becfin phragmite, *Fr.*—Schilfsanger, *G.* Although every one knows that there is no difference of plumage in the sexes of these birds, we think our author would have displayed better taste had he given a companion to the solitary and cheerless individual at present figuring on a plate two feet in length; nor can we much admire the figure, although his drooping appearance on the present occasion is doubtless owing to his separation from his mate! The Sedge Reedling is common in all the moist parts of Britain, and its nocturnal song is almost as pleasing to the true ornithologist as the more luscious strains of Philomel; and, were they poured forth more sparingly, might come in for a share of that applause so universally conceded to the latter, whose praises have been a theme of inexhaustible admiration with the poets, time immemorial.

The next plate represents a pair of Common Quails, *Coturnix dactylisonans*, Meyer,—Caille, *Fr.*—Coturnice, *It.*—Wahtel Feldhuhn, *G.* Any one unacquainted with these pretty little creatures in their natural state, would entertain an idea that the birds were larger than they actually are from an inspection of these figures. Few faults are commoner than this in drawings of animals of all classes, and it is a pity that artists do not guard against it more carefully. The quail is very widely dispersed in the old world. "So vast and countless are the flocks which often pass over to the islands and European shores of the Mediterranean, that a mode of wholesale slaughter is usually put in practice against them, which no doubt tends to limit their inordinate increase. They are polygamous in their habits; and in the migrations the males always precede the females, and are easily decoyed into nets by an artificial imitation of the voice of the latter."—In Britain, the Quail is sparingly but equally distributed, arriving in spring, and departing, with the fall of the year, for the south. Lays eight to twelve eggs, "pale yellow brown, blotched and dotted with darker brown and black," and deposits them on the bare ground. The throat, black in the male, is white in the female and young.

Rüppell's Fauvet, *Ficedula Rüpellii*,—Becfin de Rüpell, *Fr.*—The female in the plate is well deserving of commendation. Both the figures are drawn from specimens in the collection of Dr. Rüppell, the eminent continental zoologist. Inhabits the north and east of Africa, passing occasionally into the adjacent confines of Europe. "M. Temminck informs us that it gives preference to thickly wooded districts; and from the general form and contour of the body, and particularly its subdued and sober tone of colouring, we may reasonably expect that its general economy is in unison with the birds of our own island belonging to the same restricted genus." The white stripe under the eye, and the black on the throat, at once distinguish the male. Nothing is positively known of its habits, &c.

Great Bustard, *Otis tarda*,—Outarde barbue, *Fr.*—Starda commune, *It.*—Grosse Trappe, *G.* The male and female are represented, rather less than half the size of life. The former is finely executed, by Lear. The history of this splendid and now scarce bird in Britain, is familiar to even the general reader, and need not, therefore, be repeated here.

Spotted Cuckoo, *Cuculus glandarius*,—Coucou tacheté, *Fr.* The figure, of an adult male, natural size, is good, but somewhat soft in expression. "Its true habitat," observes Mr. Gould, "is the wooded districts skirting the sultry plains of North Africa; but the few that pass the Mediterranean find a congenial climate in Spain and Italy, further north than which they are rarely seen." It is not known whether the habits of this bird, as regards propagation, agree with those of our Common Cuckoo or not. The feathers of the head are darker in the middle age than in the adult, and the whole plumage is still deeper in young birds. Of the sexes we are told nothing.—Of course we fully agree with our author that this species has no claim to rank either in *Cuculus* or *Coccyzus*, but it must remain in the former genus for the present.

Northern Diver, *Colymbus glacialis*,—Plongeon imbrim, *Fr.*—Mergo maggiore, *It.*—Schwarzhalsiger Seetaucher, *G.* The figures, representing an adult male and a young bird of the year, two-thirds of the natural size, are highly characteristic. Equally distributed throughout the northern hemisphere, "giving preference to the regions within the arctic circle during summer, and progressing southward as far as lat. 36° on the approach of autumn and winter, at which seasons they are by no means rare in our islands, although, in accordance with that general law of Nature which causes the young to wander further from their native habitat, we find a much greater proportion of immature birds than of those which bear the beautifully contrasted livery of the adult." Subsists on fish, aquatic insects, &c., which it obtains by diving. Builds on the borders and islands of inland seas, lakes and rivers, the nest being placed quite close to the water. This bird lives almost entirely on the water, "though it contrives to propel itself forward (on land) by means of resting its breast upon the ground and striking backward with its feet somewhat like the action of swimming." The sexes do not differ, but the young birds want the glossy green black on the head and neck of the adults.

Doubtful Sparrow, *Passer petronius*,—Grosbec soulcie, *Fr.*—Grau Fink, *G.* We do not remember to have seen a specimen of the Doubtful Sparrow (the Foolish Sparrow of Latham and others), and cannot, therefore, say whether the figure, of a male, natural size, is characteristic. According to Dr. Shaw, "this species is found over the greatest part of Europe, in the southern portions of which it is migratory, but is nowhere so common as in Germany. It is not found in this country: it affects woods, and builds in the holes of trees, laying four or five eggs, and feeds on seeds and insects. These birds are very delicate, as numbers are often found dead in trees in winter, during which time they assemble in flocks." The sexes of this species are similar; and this and other characters point out the propriety of removing it from the genus *Passer*.

Rook Crow, *Corvus nudirostris*, Palmer,—Corbeau freux, *Fr.*—Saat Rabe, *G.* An excellent figure of an adult, rather under the size of life, is given. We conclude that our readers, one and all, are as well acquainted with the history of this venerable bird as we are, and we shall not affront our subscribers or the Rook by giving a detailed description of its mode of life.

Common Sandpiper, *Totanus hypoleucos*, Chevalier guignette, *Fr.*—Piovanello, *It.*—Trillender Strandlaüfer, *G.* The figures, representing, of the natural size, an adult and a young bird in autumn, are both pretty and characteristic, though not altogether devoid of stiffness as regards attitude. Occurs in India, Africa, and Europe, including Britain, where it arrives at the end of April, and departs in September. Food, insects, Snails, Worms, crustacea, &c., "in capturing which its motions are not less elegant than graceful, running with agility over the oozy mud and sand-banks, often exhibiting a peculiar and singular jerking of the tail, and a nodding of the head not unlike that of the Common Gallinule and some of the terrestrial Pigeons of the West Indies." In Britain "the task of incubation is commenced soon after its arrival, the female depositing her four delicate eggs, of a pale reddish white ground spotted with darker red, on the bank near the water's edge, a mere hollow in the soil or depression in the shingle serving instead of a nest." The male and female are similar, and the young birds only differ from adults in having the edges of the feathers fringed with a margin of greyish white.

Ivory Gull, *Larus eburneus,*—Mouette blanche, *Fr.* The plate, representing an adult male, rather more than three-fourths of the natural size, is to our liking. Inhabits the arctic circle, very rarely visits the temperate portions of Europe, and has only been taken two or three times in this country. Its first capture in this country was announced in the *Memoirs of the Wernerian Society,* by L Edmonston, Esq. Said to breed in rocks overhanging the sea. Eggs unknown. In the solitary wilds which it inhabits "it is constantly accompanied by the Fulmar Petrel; and, like the generality of its tribe, which are constantly observed in the neighbourhood of shipping, it is always to be seen following the whalers and feeding upon the refuse thrown overboard, which, with blubber, small fish, and crustacea, forms the principal portion of its diet. Both sexes are distinguished for the snowy whiteness of their plumage, but the young are of a uniform dark grey the first autumn, "which gradually gives place to a mottled livery of black and white, the ends of the primaries and tail retaining the dark marking the longest, and until the end of the second year. It is also said that the immaculate white plumage is that of summer, and that the head and neck are streaked with grey in winter."

Cretzchmar's Bunting, *Emberiza cæsia,*—Bruant cendrillard, *Fr.* A pair are figured, and the female is particularly well executed. This beautiful and rare Bunting was added to the European fauna by Dr. Cretzschmar, of Frankfort, as a straggler in the southern and eastern portions of that continent. Inhabits Syria and Egypt. As Temminck suggests that it may have been mistaken for a variety of the well-known *E. cia* or *E. hortulana,* it may possibly be of more frequent occurrence in Europe than is at present supposed. The plumage of the female is less bright than that of the male. Of the habits, &c., little is ascertained.

Great Auk, *Alca impennis,*—Pingouin brachiptère, *Fr.* An adult in summer dress, and two-thirds of the natural size, is remarkably happily figured, in the act of devouring a fish. "The seas of the polar regions, agitated by storms and covered with immense ice-bergs, form the congenial habitat of the Great Auk: here it may be said to pass the whole of its existence, braving the severest winters with the utmost impunity, so that it is only occasionally seen, and that at distant intervals, even so far south as the seas adjacent to the northernmost parts of the British Islands." Extends throughout the arctic circle, is unable to fly, and progresses on land with difficulty, but, as might be anticipated, is extremely expert in the water. "Here it is truly at ease, following its prey, which consists exclusively of fish of various species, with the utmost facility." Lays one egg on the bare rock, just above the reach of the highest tides. "Its colour is tinged with buff, marked with spots and crooked lines of brownish black. The young take to the water immediately after exclusion from the egg, and follow the adults with fearless confidence." In winter, the jet black on the throat and neck give way to white.

Chaff Finch, *Fringilla cœlebs*,—Grosbec pinson, *Fr.*—Fringillo comune, *It.*—Gemeine Fink, *G.* We really think Mr. Gould might have given figures more worthy of his distinguished fame as an ornithological painter, though, unquestionably, they might have been much worse. Every field ornithologist of any experience well knows that the sexes of this bird separate at a certain season. None of our smaller native birds are more universally or plentifully distributed in Britain than the Chaff Finch. The tints of the male are far brighter in spring than in winter.

Gargany Teal, *Querquedula circia*,—Sarcelle d'été, *Fr.*—Anatra cercedula, *It.*—Knak Ente, *G.* Our author has succeeded as well with this species as with most of his other *Anatidæ*, figuring an adult male and female of the natural size. Dispersed throughout North Africa, Asia, and Europe, passing into the British Islands in April and May, frequenting lakes and meres. It proceeds to more northern countries to breed, placing its nest amongst herbage near the water; lays eight or ten white eggs. Feeds, like the other Ducks which are incapable of diving, on the tops of aquatic plants, insects, shelled Snails, and their larvæ. The beautiful tints of the adult male in summer at once distinguish the nuptial attire. The young males, and adult males in winter, closely resemble the female.

Black-backed Gull, *Larus marinus*,—Goêland à-manteau-noir, *Fr.*—Mantel Meve, *G.* A beautiful figure of an individual two-thirds of the natural size, and represented swimming. Inhabits Europe and America, and is common in Britain. It is three years coming to maturity, and this circumstance has, of course, caused much confusion, by multiplying synonyms. "The British Islands afford several localities which are resorted to by this Gull for the purpose of breeding, among which, according to Selby, may be enumerated the steep holmes and sandy islands in the British Channel, Souliskerry in the Orkneys, the Bass Island in the Firth of Forth, and one or two stations on the Scottish coast." The nest, placed on the ground, consists of Reeds, Rushes, and Flag leaves. "The eggs are three in number, like those of the Herring Gull in shape, but larger; the ground colour of various shades of brown, always blotched and spotted with darker brown." Feeds on half-decomposed animal matters, refuse from ships, marine crustacea, &c. The female is somewhat smaller than the male. The white on the head and neck of adults becomes grey in winter. The young are mottled grey and white.

Sand Swallow, *Hirundo riparia,*—Hirondelle de-rivage, *Fr.*—Rondine riparia, *It.*—Ufer Schwalbe, *G.* The birds are well figured, and the species is common and well-known. We have seen a light-coloured variety.

Corn Bunting, *Emberiza miliaria,*—Bruant proyer, *Fr.*—Grau Ammer, *G.* The plate represents, of the "bigness of life," as honest George Edwards would say, an adult male. It is too large and thick, but otherwise good. Some communications relative to the distribution of the Corn Bunting in England, published in *The Naturalist,* No. XII., for Sept. 1837, prove that it is neither so generally nor so abundantly distributed with us as commonly imagined.

Part XIV.—Peregrine Falcon, *Falco peregrinus,*—Faucon pélerin, *Fr.*—Sparviere pellegrino, *It.*—Wander Falke, *G.* Although we certainly can have little to find fault with in the figures, representing an adult and a young bird of the natural size, we should not have guessed they were from the pencil of Mr. Lear, but for his name appearing on the plate. They are not hit off with his usual boldness, and the birds look too much like the dull inhabitants of a prison. Otherwise their form and colour are unexceptionable. Mr. Gould is inclined to consider the Peregrine Falcon of Europe and America distinct species, though the point is by no means settled. "In England this beautiful Falcon remains the whole year: it appears to give preference to the bold rocky cliffs that border the sea, in the most inaccessible parts of which it builds its eyrie, generally laying four eggs, of a uniform dark red colour." The young birds only acquire their adult plumage with the fourth or fifth year, and the remarkable changes they undergo have occasioned the synonyms attached to individuals in different stages. The elegance and rapidity of the Peregrine Falcon's flight is well known, and it feeds on various birds, giving the preference to Ducks, Teal, &c. The male is smaller than the female, and more blue on the upper parts. The young of the year have the upper surface brown, each feather being tipped with a lighter hue.

Common Goldwing, *Carduelis elegans,*—Grosbec chardonneret, *Fr.*—Distel Zeisig, *G.* We are certain either that Mr. Gould thinks he has failed in his representations—the figures, of an adult and a young bird, being, in fact, *misrepresentations*—or that he has never studied this beautiful species in its native haunts. The Common Goldwing (or "Gold Finch") is limited to Europe, preferring wild mountainous districts in winter. In England it is common about our orchards, gardens, fields, hedge-rows, &c., in spring and summer, but it is not often met with in these localities during the inclement seasons. Its general history is familiar to every bird-fancier.

Manks Shearwater, *Puffinus Anglorum*, Ray,—Pétrel Manks, *Fr.* The adult male, size of life, is given, with good effect. Selby believes that the diminution in the number of this species wherever man takes up his abode, is to be attributed to the greedy destruction of the eggs and young, which are much sought after for the table. Our author believes that the species is still common on the coast of South Wales. The Manks Shearwater is a truly oceanic species. It breeds in deserted Rabbit-burrows, crevices of rocks, &c., laying one white egg. Food, crustacea, fish, molluscs, &c. "Giving a decided preference to the western coasts of our islands, they are tolerably abundant in Ireland and the Western and Orkney Islands. After the breeding season, they retire southwards, even beyond the Mediterranean, where, in consequence of the increased temperature, they find a greater supply of food than they could in more rigorous climates during the winter." The sexes and young are similar, or nearly so.

Common Gallinule, *Gallinula chloropus*, Lath.,—Gallinule ordinaire, *Fr.*—Grunfussiges Rohrhuhn, *G.* This plate, representing an adult male and a young bird, in their natural haunts, could hardly be surpassed. Few species are more universally distributed, or more abundant everywhere, than the present. It appears to occur in every part of the globe. We may add to our author's description, that we have several times seen the nest six or seven feet from the ground, in Portugal Laurels and other bushes near the water, or overhanging it. When the young are hatched in these instances, they are probably conveyed to the water in their parents' bills, a mode of conveyance which we have reason to believe is not uncommon with the species. When with a friend, we once started a large Pike in a shallow ditch. The fish had previously remained quiet several minutes, but the moment it darted off, a Gallinule swam from the same spot. It was a young bird of the year, and was easily caught. Whether or not the Pike had fixed his eyes on the Gallinule did not appear; but probably neither the fish nor the bird were aware of each other's presence.

Yellow-breasted Warbler, *Sylvia hippolais*,—Becfin à-poitrine-jaune, *Fr.*—Gelebaüchiger Sanger, *G.* This is not a British bird, although our common Darklegged Warbler (*S. rufa*) has often erroneously received the name *hippolais*. "Although we cannot with propriety separate the present bird from the true Willow-wrens, [Warblers, *Sylvia*.—Ed. *Analyst*], still we cannot but be struck with the shorter and stouter contour of its body, and its more robust bill; it also differs considerably in its habits and mode of nidification; all those species that inhabit England constructing a singular domed nest, which is always placed on the ground, while the species here illustrated invariably builds on trees, sometimes in the shrubs of the garden, at others in the trees of the forest; laying five eggs, of a reddish white blotted with spots of a darker red. Those who have not had an opportunity of listening to the song of this little tenant of the grove can scarcely form an idea of its power and melody, in which respects it is only equalled by those of the Blackcap and Nightingale." Dispersed throughout the European continent. The sexes do not differ. Feeds on small insects, caterpillars, &c. The figure, of an adult male, is very good.

Andalusian Turnix, *Hemipodius tachydromus*,—Turnix tachydrome, *Fr.* A male and female of this somewhat singular-looking creature are given, of the size of life. "Tolerably abundant at Gibraltar and that part of Spain which borders the Mediterranean; being more scarce in the central portions, and in the northern and all similar latitudes altogether absent." Feeds on insects, seeds, &c. "Temminck states that they are polygamous, and that they give a preference to sterile lands, sandy plains, and the confines of deserts, over which they run with surprising quickness; also that the young and old do not associate in bevies like the Quail." The sexes are similar. The members of the genus *Hemipodius* differ from the Quails in wanting the hind toe, in their much smaller size, and in their long slender bills. We have little practical knowledge of the present species, and will therefore suppose our author's figures to be characteristic until we are certain of the contrary, as reliance may almost invariably be placed both in the plates and letterpress of the *Birds of Europe*.

Robin Redbreast, *Rubecula familiaris*,—Becfin rouge-gorge, *Fr.*—Rothbrustiger Sanger, *G.* We are almost ashamed of saying anything respecting either the plumage or habits of Robin in a quarterly journal of science, and shall therefore merely observe that the three figures—of an adult male and female, and a fully-fledged young bird—are the best we have seen of the species.

Cinereous Surn, *Surnia cinerea*,—Chouette Lapone, *Fr.* We do not, on the whole, particularly admire the plate, which represents an adult male, three-fourths of the size of life. Occurs occasionally in Scandinavia, Lapland, and Russia, but is only common and indigenous in some parts of North America. According to Dr. Richardson, "it keeps within the woods, and does not frequent barren grounds, like the Snowy Owl, nor is it so often met with in broad day-light as the Hawk Owl, but hunts principally when the sun is low; indeed it is only at such times, when the recesses of the woods are deeply shadowed, that the American Hare and the marine animals, on which the present species chiefly preys, come forth to feed." M. Paikul, a Swede, states that a specimen in his collection measures two feet eight inches, being larger than the female of *Bubo maximus*. Dr. Richardson discovered a nest "on the top of a lofty Balsam Poplar, built of sticks and lined with feathers. It contained three young, which were covered with a whitish down." The sexes differ considerably in size—the female, of course, being much larger than the male—but they are similar in plumage.

Black-tailed Godwit, *Limosa melanura*,—Barge à-queue-noire, *Fr.*—Pantana pittima, *It.*—Schwarzschwanzige Sumpflaufer, *G.* The plate represents adults in summer and winter plumage, living size. Distributed throughout Europe, and occurring also in India and Africa. "In its manners it is elegant and graceful. The flesh of the adult is rather coarse and rancid, but the young of the year are more delicate, and are therefore more in request for the table. A few pairs annually resort to the marshes in the neighbourhood of Yarmouth, and to the fens of Lincolnshire; but they are rarely permitted to breed unmolested, their large size and peculiar actions being sure to attract the notice of the sportsman or the egg-gatherer. The eggs are four in number, of an olive green faintly blotched with black, and are deposited on the bare ground, among the herbage, with little or no nest." Feeds on Worms, insects, larvæ, &c. It runs and flies with ease and rapidity. "The female surpasses the male in size, and frequently in the brilliant colouring of the summer plumage." The rufous tints of summer wholly disappear in winter, and the young of the year may be known, amongst other distinctions, by the white streak between the bill and the eye.

Blue Tit, *Parus cæruleus*,—Mésange bleue, *Fr.*—Cinciallegra picola, *It.*—Blau Meise, *G.* The plate is good, though perhaps the figure of the male is scarcely so excellent as that of Lewin. Mode of life well known.

Kittiwake Gull, *Larus rissa,*—Mouette tridactyle, *Fr.*—Gabbianco terragnala, *It.* An adult and a young bird of the year are represented, natural size. The latter is a fine figure. Occurs on the continent and in Britain, in the latter as a summer bird of passage. The short hind toe, characteristic of this species, has induced Stephens to institute a new genus, under the title of *Rissa,* in which Mr. Gould is not inclined to follow him. The young birds have been described as *L. tridactylus,* a specific name which must now fall to the ground. Young birds have the bill black; in adults it is of a dark olive-colour. The mature dress is acquired at the second autumn. Breeds on the ledges of bold precipitous rocks overhanging the sea, forming the nest of dried grass and Sea-weed; its two eggs are olive-white, blotched with dark brown and purplish grey. " The name Kittiwake is given to this bird from the peculiar call during the season of incubation, which the male reiterates as he wheels round his mate upon the nest, or pursues his way on buoyant wing over the surface of the waves."

Red-breasted Flycatcher, *Muscicapa parva,*—Gobemouche rougeâtre, *Fr.*—Kleiner Fliegenfanger, *G.* The young bird of the year, in its second plumage, in the plate is remarkably pretty, but we are not acquainted with this rare bird. The adult male bears no small resemblance to our Robin Redbreast, and Mr. Gould observes that " the first plumage of the young birds is spotted as in that species." Its manner and action are strikingly peculiar, and appear to partake of those appertaining to the species of more than one genus; it resembles the Robin not only in the colour of its plumage but in several of its actions*, being sprightly and animated, constantly jerking its tail and depressing its head in the manner our Redbreast is observed to do; it also imitates the Whin Chat in the depressed oscillating movement of the tail: thus it appears to form an intermediate link between the *Muscicapidæ* on the one hand, and the *Saxicolinæ* on the other. In the comparative length and robust form of its legs, this intermediate station is also further evinced; for though the tarsi have not the strength which we see in the true *Saxicolinæ,* still they are more developed than in the genuine Flycatchers. It is a bird of migratory habits, and in Europe its habitat appears to be limited almost exclusively to the eastern portions of the continent. It is tolerably abundant in the neighbourhood of Vienna, and is known to breed annually in the woods of that district. From the circumstance of our having seen it in collections from the East Indies, particularly from that portion adjacent to Persia, it is doubtless widely diffused over the neighbouring regions." The nest is placed among the interwoven leaves of trees, or the forks of branches. Eggs unknown. Feeds on soft-winged insects, which it takes on the wing, and also, our author opines, on berries. The breast, red in adults, is light yellow in young birds.

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* We made the comparison between *M. parva* and the Robin Redbreast—at the beginning of the above description—previous to perusing Mr. Gould's account.—Ed. *An.*

Spotted Eagle, *Aquila nævius*,—Aigle criard, *Fr.*—Schrey Adler, G. A very creditable figure, by Lear, of a bird in the plumage of the second year, three-fourths of the natural size. "It is sparingly dispersed through Germany, the Pyrenees, and Russia; and, from the circumstance of individuals having been received from India, we may conclude that those found in Europe are only a scattered few, dwelling in the extreme limits of their true habitat. According to Temminck it is common in Africa, and especially in Egypt; hence we may infer that its range is throughout the south-eastern portions of the Old World." Builds in high trees, and lays two light-coloured eggs, thinly blotched with reddish-brown. Feeds on small quadrupeds, and, which is remarkable for an Eagle, on various large insects. In many of its habits it is said closely to resemble the Golden Eagle, but it is much smaller than that bird. The female, as in the other *Falconidæ*, is considerably larger than the male, but the sexes are similar in colouring. This species is four or five years acquiring the mature plumage. Young birds are much spotted, but the spots gradually decrease in number and distinctness, and become nearly effaced in adults, whose whole plumage is of a rich glossy brown, the primaries being black.

Siberian Corythus, *Corythus longicauda*,—Bouvreuil à-longue-queue, *Fr.* The plate contains figures of the male and female, size of life, both excellent, but the former truly admirable. Inhabits the high northern regions of the old continent, especially Siberia, where it is abundant. Migrates in winter to the more southern portions of Russia and Hungary. "In its general economy it resembles the Pine Grosbeak [or Thickbill], and its food is said to consist of wild berries, the buds of trees, &c." Nidification unascertained. The lovely rosy tints of the male are clear olive-colour in the female. It seems probable that a partial change of hue takes place at the autumnal moult, the plumage becoming lighter, and the feathers being bordered with whitish.

Daw Crow, *Corvus monedula*,—Corbeau choucas, *Fr.*—Cornacchia, *It.*—Turm Rabe, *G.* An adult male and female are figured, natural size, and very beautiful. The female is peering out of the hole of a tree. This bird is distributed throughout Europe, and also in the contiguous portions of Asia and Africa. That the Daw Crow is omnivorous, that it breeds in hollow trees or rocks, and that the sexes are alike in plumage, it is almost unnecessary here to observe.

Pine Bunting, *Emberiza pithyornus,*—Bruant à-couronne-lactée, *Fr.* A pair of these birds are spiritedly executed. Inhabits the north of Russia and Siberia, but also occurs as far south as the centre of Turkey, &c. This bird, like most of the Buntings, possesses a handsome shape and plumage. The colours of the female are more dusky than those of the other sex, and she wants the "*couronne lactée*" of the male. "In size, this rare Bunting rather exceeds *E. citrinella,*" our common Yellow Bunting.

Common Curlew, *Numenius arquata,*—Courlis cendré, *Fr.*—Chiurlo maggiore, *It.*—Grosse Brachvogel, *G.*—Graawe Wulp, *Nederl.* The plate represents, in a very superior manner, an adult male, of the natural size. This large but shy species is dispersed throughout the old world, appearing equally at home in all climates. "In the temperate portions of Europe they pass the winter on the sea-coast, and retire to the highlands of Norway during the summer." In England a few remain to breed. Feeds on marine Worms, crustacea, &c. "The Common Curlew possesses extraordinary powers of flight, and is consequently enabled easily to pass from the shores of the sea, at every rising tide, to inland wilds, fields, morasses, &c., and by some peculiar instinct to return to the coast almost at the moment of the commencement of the ebb." They lay on the ground, making scarcely any nest, and employing the same manœuvres as the Peewit to draw enemies from the spot. The sexes do not differ.

Fuscous Gull, *Larus fuscus,*—Goëland à-pieds jaunes, *Fr.*—Gabiano zafferano, *It.*—Herrings Meve, *G.* An adult and a young bird of the year are well represented, rather more than two-thirds of the natural size, but the situation of the youngling behind the other is not judicious—nor, we may add, courteous! "On the shores of the continent of Europe its habitat is spread from the Baltic to the Mediterranean." Feeds on mollusca, fish, &c., which it procures in the sea, or in lakes and rivers. Builds in marshes, and on rocks near the sea-shore, a nest of dried grasses, and lays three or four deep olive brown eggs, blotched with brown. The general habits and haunts resemble those of *L. marinus.* The young birds are dark brown; the sexes are similar, but the head and neck of adults are dashed with brown in the winter.

This part closes with a splendid figure of an adult male, one third less than the natural size, of the Bean Goose, *Anser segetum,*—Oie vulgaire, *Fr.*—Oca salvatica, *It.*—Saat Gans, *G.* "In the temperate portions of Europe, and especially in the British Islands, the Bean Goose is rather a winter visitor than a permanent resident." Extensive marshes and lakes are its favorite resorts, but it will frequently approach the low grounds, feeding on Peas, Beans, and Wheat. In spring they migrate northward to breed. Breeds in marshy spots, laying from eight to twelve white eggs. There is no sexual or seasonal change of plumage worth noting. The Bean Goose is distinguished from the Greylag Goose by the bill of the former being much smaller, and black. The figure in the plate is represented swimming, and is altogether worthy of study.

OBSERVATIONS ON INSANITY AND LUNATIC ASYLUMS.*

Mr. Browne professes a most laudable object in publishing these lectures. His desire is—to draw the attention of the public, and especially of those who, by profession or philanthropy, are engaged in performing works of mercy, to the consideration of what has been done, and of what remains to be done, for the relief of the most unfortunate of our fellow-men—of those who may be almost literally said to "sit in darkness and in the shadow of death, being fast bound in misery and iron." His object then is a noble one; and his pleadings in behalf of the "most unfortunate" abound with a pure pathetic eloquence; and, we would hope, it will be the prayer of every truly benevolent mind, that they may prove extensively influential and permanently successful.

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* Being the Analysis of *What Asylums Were, Are, and Ought to Be;* forming the substance of Five Lectures delivered before the Managers of the Montrose Royal Lunatic Asylum, by W. A. F. Browne, surgeon and medical superintendent of that institution; 8vo. Black, Edinburgh; and Longman, London, 1837; pp. xii. 240.

For its title, Mr. Browne's first Lecture has the inquiry—"*What is Insanity?*" This question embraces relations which are as comprehensive as they are extraordinary, and Mr. B. opens its resolution in these remarkable terms:—

"The question may be put and answered in two senses—either philosophically or practically; either as directed, to ascertain the actual condition of the mind which constitutes disease, or to determine that amount of diseased action which compromises the safety of the sufferer and justifies legal interference. Our chief concern is with the aspect which the disease presents, after the law has interfered. In order to arrive at just conclusions on such a subject, it is incumbent on us to understand something of the nature and powers of the mind while in possession of health and vigour. This is generally overlooked in the investigation, and the verdict of the public and of a jury is as recklessly and ignorantly pronounced respecting mental strength, as if the points at issue were the discovery of the perpetual motion or the utility of a comet. It is not to be expected that either of these tribunals should be composed of metaphysicians; but it is highly desirable that every man, qualified by his station in society to judge or legislate in such matters, should be competent by education to found and form his judgments on a knowledge of what consciousness and observation shew to be the laws of our spiritual nature. So vague are the ideas generally entertained, or rather so destitute is the great majority of even educated men of any ideas or definite opinions as to mental philosophy, that very recently the capability of repeating the *Multiplication Table* was gravely propounded in an English court of law as a test of sanity. This looks like satire on the reputed money-making propensities of this nation, but the proposal had no such origin. And to prove how momentous the interests are which hinge upon a clear comprehension of what insanity is, it may be mentioned that in the very case where this arithmetical crux was suggested, immense property and the reputation and affections of many individuals were at stake."

Philosophy and Revelation harmoniously associate in representing the Mind and the Body as two distinct things, having their natural elements and constitutions essentially different; although, while confined to this world's sphere, these two things do most intimately co-exist and co-operate under mutually determinate laws—the former, by some high mysterious power, using an organic system of the latter as the vital instrument through whose functions all the mental states and actions are manifested. Deriving instruction from both these sources, most reflecting Physiologists regard the doctrine as being demonstrated—that the Brain is the organic system which the Mind thus uses as the instrument of its operations, under all the forms of its being, feeling and acting; and that, as the Mind is a collective system of faculties, so the Brain is a collective system of organs whereof every one performs exclusively the appropriate office of subserving one individual faculty solely as its own peculiar instrumental agent. This is a fundamental distinction; and, although it ought always to be carefully, constantly and prominently maintained in every discussion on the mental science, yet there are writers who expose themselves to be charged with a defect of precision, by their indiscriminate employment of the words *organ* and *faculty*, as if they were convertible terms, and thereby expose themselves to be charged still farther with the offence of encouraging fictions, which tend to displace the immortal mind of man from the high station which the Deity assigned to it in the intelligent creation.

Throughout his volume, Mr. Browne exerts unusual care to preserve both precision and perspicuity in inculcating the important doctrine—that every appearance of unsoundness in the mental faculties, is a manifest symptom of disease in the brain; and, as such, it ought ever to be considered as a principal object of treatment, in cases of Insanity. He distinguishes the mental powers or innate faculties of the Mind into four classes,—the mere animal impulses or propensities; the moral sentiments; the perceptive powers;* and the reflective or rational powers. Now, to every faithful observer of the human character, the fact must be apparent—that the manifestations of all these faculties are gradually developed and gradually decline; that they are weak in infancy, strong in maturity, and again weak in old age; and that their evolution and decay correspond with successive changes in the structure of the brain. Farther, as Mr. B. justly observes, it has been ascertained—that the condition or intensity of these manifestations is influenced by the state of the body from external or internal stimulation; that in certain affections of the nervous system, their activity is impaired; and that, in certain cerebral diseases, they are altogether extinguished. Lastly, it has been proved—that the integrity and vigour of these manifestations depend upon the integrity and vigour of the brain; that, if this organ be prevented from attaining a certain size, the lowest only of the mental manifestations, and these but feebly, can be exhibited; and that, if the brain should be injured by accident or disease, these manifestations are diminished in number, impaired in strength or annihilated.

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* When the term *Power* is employed with reference to the *Mind*, it may be considered as synonymous with *Faculty*.

Mr. Browne abstains from inquiring—in what manner the connexion between Mind and Matter, is effected; and he thinks it probable, that the link will ever escape human research. This statement of his, and his distinction, constitute an essential principle of the Truth which is universal and eternal: they shew, that Mind is one thing, and that Matter is another different thing; and they shew, that these two distinct things are connected by a third thing or link which, in Mr. B.'s mind, is all but inscrutable. He might, however, have advanced one step farther, and recognized the proposition—that the third distinct thing, the connecting link, is Life which unites Matter and Mind in one form of co-existence, and thus makes every animated being a threefold individual, endowed with three distinct, though correlative, kinds of energy and power. He goes on to say, with a praise-worthy earnestness:—

"Enough has been disclosed to teach us the importance of recognising the connexion between Mind and Matter, and of making it the foundation of all inquiries into the nature of mental alienation, and of all attempts to improve the condition of the insane. From the admission of this principle, derangement is no longer considered a disease of the understanding, but of the brain, the centre of the nervous system, upon the unimpaired constitution of which the *exercise* of the understanding depends. The brain is at fault, and not the mind. The brain is oppressed with blood; it is irritated; it is softened; and the ideas are confused, the feelings exalted, because those parts of the system with which their healthy *manifestations* have been associated in this world have undergone an alteration. But let this oppression be relieved, this irritation he removed, and the Mind rises in its native strength, clean and calm, uninjured, immutable, immortal."

Seeing the absolute truth of this doctrine, and the positive certainty of the facts which establish it, that the Mind's native strength can be neither injured nor changed, what again is Insanity? Mr. B. replies, it is inordinate, irregular or impaired action of the Mind, depending upon and produced by an organic change in the brain which is the Mind's instrument; and the extent of the disease corresponds to the extent of the injury or destruction of the cerebral structure. Precisely as a perfect hand cannot make good writing with a bad pen, so the uninjured and immutable mind can never display sound feeling, perceiving or reflecting by means of an unsound or defective brain. Insanity being strictly a bodily disease, its nature, intensity and aggravations must be regulated in a great degree, Mr. B. judiciously observes, by the relations of the brain to the other organs of the body, and the relations of both these to external agents; and farther, if such a dependence does exist, an equally intimate connexion must obtain between the state of these organs and external agents, and the remedies exhibited for curing the disease.

Dr. Haslam, whose head was the receptacle of some practical knowledge concerning Insanity, is said to have repeated these miserable conceits in a court of justice,—that he "*never saw any human being who was of sound mind,*" and that he "*presumed the Deity is of sound mind.*" Mr. Browne discerns the just value of this vapouring nonsense, and proceeds to remark:—

"This is next to asserting that no palpable distinction exists, no line of demarcation can be traced, between the sane and the insane. The line is either ideal or purely geometrical. If the two most widely separated conditions of mind—its greatest strength and serenity and its abject imbecility—be contrasted, the distance appears enormous and impassable; but, if we gradually recede from these extreme points towards the median, it will be found, so imperceptibly do the distinctive marks disappear, and so insensibly do eccentricity on the one hand and enthusiasm on the other, blend together, that the task of declaring this to be reason and that to be insanity, is exceedingly embarrassing, and to a great degree arbitrary. People have puzzled themselves to discover this line, a *terra incognita* which does not exist; the mind being susceptible of as many shades of difference in the strength and relations of its powers as is the body. Another enigma has been propounded—to establish a definition of insanity; that is, to discover one form of words expressive of the nature of a hundred different things."

In being a state having degrees illimitably various, the lowest of these can be detected only by the most experienced and vigilant observers, while the highest are usually distinct and evident to every beholder of their manifestations. This being the case, it is quite clear that the definition of a state so comprehensive cannot usefully embrace more than the chief characters whereby each of its diversities is invariably distinguished. Accordingly, it may be enough to say—Insanity is that preternatural state wherein a person displays *inordinate* motives, or practises *inordinate* actions, *injurious* to himself or others; and the extent to which his motives or his actions are inordinate and injurious, is the degree of his insanity. Mr. Browne remarks, concerning definitions, that however interesting and edifying these investigations may be to mere philosophers, the philosophical practitioner ought to make the inquiry invariably bear reference to the question, whether isolation would be for the benefit of the patient. He continues—

"The criteria, however, in forming a judgment are supposed to be various and adequate. Is a man able to manage his own affairs, is he violent, virulent, extravagant, or troublesome? These are the questions addressed to medical witnesses: it is rarely demanded, whether confinement will conduce to the restoration of health. That incompetency for business, or irritability, does occasionally require the interference of the law, may be true. Property and the public peace of society must be protected: and, where either the one or the other is threatened or disturbed, no difficulty can be experienced as to the propriety of coercing the violator. Insanity is evidently the cause of such outrages, and insanity of a kind that cannot be efficiently treated without isolation. But, even in such cases, the offender sometimes proves to be a delinquent—a criminal rather than a lunatic, and an asylum becomes more of a penitentiary than an hospital. This is a minor evil: a much greater results from the universal application of such tests leaving lunatics at liberty, and incarcerating sane, or comparatively sane individuals. Thus, for example, the cunning vindictive maniac may be perfectly competent to conduct mercantile, or even more complicated affairs, with ability; he may even prosper in his enterprizes; and yet his treatment of those dependent upon him, of all those who have offended him, of all whom he suspects, may be marked with the maliciousness of the demon, and the indiscriminate ferocity of the maniac. If subjected to such tests, he may never be suspected, until some out-burst of fury, when he is deserted by his usual caution, consigns those around him to death or misery. This man ought to be confined; but he escapes until the evil is done. Again, the man who, from natural inaptitude to details of business, is incapable of conducting his affairs advantageously, may be in all other respects rational and praise-worthy: he may be a good mechanician, an artist, a man of strong affections and irreproachable manners. This man ought to be free; but, being subjected to the same tests, he is confined, until his whole mind is as much enfeebled as were his powers for business. All chances ought certainly to be in favour of the lunatic; for a greater injury is done by the sacrifice of one sane individual, than by the freedom of many lunatics.

The test ought to be as general as possible, and to have reference, not to the abstract question of what Insanity is, but to the probable consequences which may accrue from the declaration that it exists in every case. Entertaining these opinions, then, in place of endeavouring to *define*, I have *described* the different forms which Insanity assumes, believing that by such a course the interests of Science and Humanity will be better served, than by straining after what the failure of all previous writers nearly proves to be a nonentity."

Considering that an enlightened system of classifying lunatics must depend on the accuracy of the classification of the varieties of the disease with which they are afflicted, Mr. Brown exhibits three different arrangements—Arnold's, Heinroth's, and that which he himself has carefully constructed. He distributes the diversities of Insanity into four closses—*Idiocy*, *Fatuity*, *Monomania*, and *Mania*, and these he establishes with an abundance of concise and perspicuous illustrations.

IDIOCY.—This class comprehends four states or gradations:—*First*—that wherein neither sensation nor reason appears to have been bestowed; where the imperfect being seems not to be conscious of light, or of sound, or of hunger; and where sleep alternates with a swaying motion of the body, during the protracted life-time which the unhappy idiot is often left to endure. *Second*—that where the external senses exist without the co-existence of any faculty by which the sensations thus obtained can become objects of reflection. Such individuals prefer light to darkness, experience pleasure from odours, and occupy much time in moving their hands along smooth surfaces. *Third*—that wherein the patients, besides exercising their senses, are able to contract attachments, to display desires, and to feel the first throbs of ambition. *Fourth*—that in which, additionally to these feelings, there is a certain but very limited power of ratiocination, a facility in acquiring a mechanical art, or an aptitude for arithmetical or mathematical studies, without any corresponding evolution of the other powers of mind. Mr. B's. remarks on this four-fold distinction of Idiocy, are apposite and useful.

FATUITY.—This, as a class, is generally an effect of apoplexy, chronic inflammation of the membranes of the brain, or of some signal alteration in the texture of its nervous substance. The malady is often slow, always insidious, in its advances. Half a life-time may elapse, with gradually increasing inconsistencies and imbecility, before the understanding is suspected to be undermined, or the glaring approach of a second childhood is more than surmised. Fatuity may be partial or complete: it may implicate and enfeeble or destroy one, several, or all of the mental faculties; these may remain, but their strength especially the strength acquired by cultivation, is gone. They no longer act in concert; and the indistinct description of a discovery in mechanics, or a transaction in business, is associated with a prayer or a passionate ejaculation. Some solitary power, or accomplishment, or favourite train of thought, occasionally lingers behind the rest or survives their destruction. From their being at once harmless and independent of society, from the extinction of their social dispositions, the fatuous lunatics have a separate ward allotted for their use in most hospitals, where their existence glides onwards to its peaceful close, undisturbed by cold, or hunger, or darkness, or pain, or any of the few strictly animal irritations of which they are susceptible.—Mr. B.'s picture of Fatuity is as faithful as it is humbling and melancholy.

MONOMANIA.—This is partial insanity, and it takes place when one, several or many of the mental faculties have their manifestations deranged relatively to one particular subject which may be simple or complicate. Fourteen distinct kinds of this malady are succinctly and graphically described by Mr. Browne, as examples of its multiformal appearances. 1. The *Monomania* of *Concupiscence;* with inordinate sexual desire, incontrollable by the powers of self-government, by admonitions, threats, punishment or coërcion, the patient being generally furious and inaccessible to any moral influence. 2. *Monomania* of *Homicide*, or the passion to destroy; with an irresistible impulse to tear or break clothes, furniture, books, plants or other articles valued as objects of usefulness or desire; with a diposition incorrigibly quarrelsome, where the monomaniac seeks grounds of dispute and antagonists, throws all around into turmoil and confusion, and will fight with his shadow rather than suffer his aggressive powers to be dormant; or with an indomitable hatred of human life, superadded to the contentious and destructive inclinations, and a thirst for blood which is insatiable. 3. *Monomania* of *Pride;* either with the exaltation of self-conceit, appearing in the deep and impregnable notion of superiority and indifference or contempt for all that is beneath the egotist, or that does not minister to his affairs or his selfishness; or with these supercilious feelings, coupled with delusions as to the character, circumstances, rank and claims, upon which the visionary pretensions of his haughtiness are based: in the most pertinacious contenders for imaginary dignity, there is no loss of the consciousness of personal identity. 4. *Monomania of Vanity;* with an irrepressible craving for applause, homage and admiration: this craving is the germ of the disease; but, from it, there spring a thousand grotesque manifestations of the appetite and the modes in which it requires gratification: with the vain monomaniac, the mind's errors all tend towards the excitement of wonder and approbation: he is a cringing beggar for the smallest mite of praise or deference. 5. *Monomania of Timidity;* with vague, exquisite terror for its essence: it may be definite and have an object, real or imaginary, frightful or unalarming; or it may have an insuppressible apprehension of present or prospective evil, without any conception of what is feared or why it is feared; and the object dreaded, when there is one, is external and connected with certain persons or events or influences, or it is internal making a part or condition of the disordered mind itself; hence, there is the fear of some persecutor, plot or awful calamity; or the distracted sufferer quails at his own resolves, at what he is, at what he may become. Fear renders the system defenceless against the virulence of contagious diseases; and, while it actually causes many attacks of Insanity, it predisposes to a still greater number. 6. *Monomania of Cunning;* with the wish to conceal, mystify or deceive, impregnated with the suspicion that treachery is practised or designed against the crafty lunatic: he places no confidence in any one friend; he sees a sinister meaning in every act; he gathers insinuations from every word; he is the victim of some plot, the meshes of which surround him, but which he will break through and baffle; he will outwit all machinations; he glories in concealment and insincerity, in circumventing and in assuming an aspect different from the true expression of his feelings; his friends are his dupes; and, while he writhes under the idea of their falsehood and connivance, his delusions revert to schemes by which they may be deceived in retaliation. When cunning is associated with malicious or suicidal intentions, the case is distressing: the design can seldom be frustrated. 7. *Monomania of Superstition;* with an engrossing sentiment of blind devotion and awe, delusions resting upon the relations which the patient holds to the Deity and to supernatural beings, acts of worship really solemn or extravagant or horrible, vision-seeing, miracle-working, and claims to the possession of divine inspiration: the philanthropic monomaniac believes that, as a missionary or a preacher or a prophet, he is destined to achieve the conversion and regeneration of mankind; while, with him that is selfish, his own personal interests and salvation are the cherished concernment: there are few suicides from superstitious insanity: scepticism produces a greater number of maniacs than enthusiasm. 8. *Monomania of Despondency;* with a loss of confidence in the talents and prospects which had previously been regarded with satisfaction; with an utter abandonment of hope, and a miserable lethargic despair: without delusion or incoherence, there is a settled and dreadful conviction of the approach of ruin and desolation, against which the mind makes no effort, and the sufferer clings to his horded misery: he requires unremitting attention; no ordinary precaution will prevent the success of his designs when these are suicidal; for years, they may be cherished in silence, until the fears and cares of friends are lulled to sleep, and then the fatal scheme is executed. 9. *Monomania of Imagination;* with pretensions or attempts to do every thing, and a delighted conviction that every thing is done in a manner the most exquisite and perfect; with a panting after excellence, and an indefatigable struggling to attain it, in the higher spheres of human exertion. Such a monomaniac lives in an atmosphere where the distorted objects appear to have a gigantic size, a sublime magnificence, a surpassing beauty: with him, every thing is superlative; his refinement would astonish an optimist; he is a trancendentalist. 10. *Monomania of Avarice;* with the twofold propensity to acquire and to hoard, without regard to means and consequences: the avaricious lunatic has all his day-dreams directed to the acquisition of wealth, property or aggrandizement; his air-castles are built of gold; but, though covetous of riches, he is omnivorous, and derives pleasure from receiving or taking any article, without concern about its value; to him, stealing is absolutely delightful; he will rob his fellow-patients in an asylum, seize upon every thing within his reach, and boldly justify his conduct upon the ground that all thus taken is his own; but he makes no use of such acquirements; it is the mere act of accumulating that constitutes his happiness. 11. *Monomania of Miskindness;* with an excess of benevolence and affection, and an over-anxiety for the welfare of the whole of the human race, or for that of acquaintances and friends. That *visionary* who neglects his own duties in order to eradicate poverty and sickness and sorrow from the world, or gives up his soul to anguish because the attempt has failed, and the *mother* who can neither act nor think nor sleep, from distraction for the safety of her children or relatives, because she cannot relieve them from some evil or misery which gives them no annoyance, are *both* instigated by similar morbid feelings. The affectionate monomaniac is a melancholy spectacle: there is a nobleness and magnanimity in his phrenzy: he strips himself of his clothes, and he starves for days together, in order to supply the fancied wants of his associates: his mind teems with projects to alleviate their condition, or he wanders about declaring that his whole kindred is in misfortune or has been destroyed, and he searches for their mangled bodies in every hole and crevice. He is too often rendered unhappy by the delusions of wretchedness which are ever before him; or, torn by apprehensions for the misfortunes of friends, by disappointment from their want of affection, and by grief for their ingratitude, he commits suicide and expires. 12. *Monomania of Misperception of Relations of Ideas;* with accurate perceptions, clearness and fidelity of the senses, regular suggestions or impulses of the feelings; but without ability to arrange, contrast, compare or analyze the ideas that are acquired; and this is the error which constitutes the present form of monomanical derangement. It results from disorder of the intellectual faculties, whose office is the association or separation of ideas; and, when this disorder becomes predominant, the power of reasoning rightly is overturned or extinguished. The total absence of concord, connexion or sequence in the thoughts, the inability to assort or methodize, before the mind, the classes of ideas according to their qualities and natural order, is the principal feature of this kind of insanity. The incoherence of irrational persons often depends on this cause; but it is the plausible incoherence which seems to have a meaning, could this only be discovered. Men so affected, may continue to mingle with society and to be useful citizens; when confined, so much of the mind remains sound and vigorous, that they may be entrusted with responsible situations in the establishment to which they are consigned. 13. *Monomania of Misperception of Relations of External Objects;* with an intellectual inability to take a right cognizance of these, as reported to the mind by its external senses. It is in combining the faithful communications of sense, that this kind of monomaniacal infidelity is committed: thus, for instance, the idea of a house encompassed with woods may be well defined, but the idea of the relation which the house bears to the surrounding trees, is vague, indistinct or erroneous; the true idea is disfigured by a misconception. 14. *Monomania of Misperception of Qualities of External Objects;* with incapability of perceiving these under their natural conditions, or with the power of doing so entirely suspended: for example, a mind otherwise unimpaired sees a hunting-field where the dogs, horses and sportsmen are all of gigantic or microscopic size, they resemble mammoths or ants at full speed; and the colouring of the scene is uniform or it is infinitely varied. Individuals thus affected cannot distinguish one tint from another, or they perceive colours in an imperfect or erroneous manner; they experience a great inaptitude to arrange all their visual impressions into one whole: these start up contrary to the will, in irregular succession and as isolated perceptions; so that, besides being a hallucination, the hallucination of such unfortunates is a thing of threads and patches.

MANIA.—This is madness or consummate insanity, and it results from irregular action of all the mental powers. Its ravages are not confined to certain groups of feelings or perceptions, to associations more or lesse extensive; it implicates the whole. They may not be all equally injured; but so deeply rooted is their perversion as to enfeeble that which it does not overthrow. Ideas are chaotic, in such a case; but, amid the confusion, there may be discerned the struggle of maddened propensities and extravagant feelings, with the jarring of the elements of memory and perception. The recollection of some long-past scene is mistaken for a present impression; there is a want of discrimination between what is reflected and what is felt; the passions are involuntary; anger bursts forth without provocation; sorrow arises the next moment; terror succeeds, without a single cause for alarm; and the paroxysm terminates with the loud hollow laugh of brutal merriment. This is Mr. B.'s most faithful and pathetic outline of maniacal insanity: he completes the sketch, as underquoted:

Here, he adds, " are three things to be considered,—the want of power to control or direct the mental operations,—the absence of all harmony or sequence between these operations,—and the excessive rapidity with which these operations are carried on. In whatever way induced, whether by wine or emotion or disease, excessive activity is known to affect the propensities and feelings by increasing their excitability and by rendering their suggestions intense, irresistible and involuntary; and, in some cases, they become permanent, if the cause continues to exist. Upon the reflective and perceptive faculties, the effect of overacting is altogether different; carried beyond a certain point, it disturbs, impedes or arrests the sound exercise of the understanding. The excited judgment may attempt to compare two facts, but the laws which regulate this step are abrogated. The whole of the intellectual powers are simultaneously active; and, in place of two, there are twenty propositions to be examined, each of these being distorted by the medium through which it arrived, and withal the power to exclude what is extraneous, or the power to perceive what is essential to the examination, neither of them remains. Violent excitement of the propensities materially contributes to this disturbance, and the process of intoxication amply illustrates the explanation given of the psychological cause of *Mania*—the excessive simultaneous activity of all the mental powers. The drunkard, as he swallows repeated draughts of some exciting liquor, he waxes valiant or vain or generous, under its influence, according to his character. His wrath is fierce, his mirth boisterous, his kindness overpowering: his every sentiment is extreme. This is clearly a description of the irrepressible activity of the lower feelings; but, gradually and in proportion to the augmenting intensity of the emotions specified, the ability to perceive the merits of an opinion is affected, and then the perceptive powers fail, while double vision and erroneous impressions of all kinds follow. The perfect confusion of *Mania* closes the scene: what tends not a little to give force to the comparison here instituted, and to shew that the states compared are strictly analogous except in their duration,—is the great development of physical strength and insensibility to pain, which occur in both states. In most cases, the maniac is furious as well as incoherent: his strength is tremendous, and cannot be restrained by ordinary means. It is not, however, necessarily exerted for malicious purposes; otherwise death and desolation must follow in his track, and the coërcive measures so long recommended might appear to be justified.—These symptoms all bespeak increased activity; but there is also a species of *Mania* with diminished activity. Under this denomination, are included the cases where the feelings are in abeyance or extinct, while the powers purely intellectual are disordered by increased activity. The combination of fatuity of the propensities with incapability of perceiving the relations of ideas or things, will convey a notion of this form of insanity. There is the same incoherence and preposterous grouping of recollections and actual impressions, but there is neither the wildness, nor vehemence, nor irritability, nor terror. The incongruous imaginings which the depressed maniac conceives to be opinions, or his observations on what is presented to his mind, are poured forth volubly; but he has not pride, nor vanity, nor irritability, to be aroused either by external or internal expressions."

These varieties of Insanity are found in every possible state of combination, exhibiting new and characteristic features; but, although it would require a voluminous treatise on the *Philosophy of Insanity* to comprehend a description of these combinations, yet Mr. Browne professes that his object will be attained, if the sketches delineated in his first Lecture shall serve to indicate the most striking distinctions between the different varieties, and how readily and humanely and profitably a separation of the inmates of Lunatic Asylums, founded on such broad distinctions, could be carried into effect.

Mr. Browne's second Lecture, like the first, has an interrogative title: its subject is—"*What are the Statistics of Insanity?*" This leads him into a very comprehensive but requisite inquiry which he ably prosecutes to a satisfactory conclusion. In the course of his disquisitive observations on the manifold bearings of this subject, he establishes these important propositions. 1. That, in Britain, there are not less than fourteen thousand lunatics, variously distributed. 2. That, insanity is not an inseparable adjunct of civilization; though, with this, come sudden and agitating changes of fortune, vicious effeminacy of manners, complicated transactions, misdirected views of the objects of life, with ambition and hopes and fears which man, in his primitive state, does not and cannot know; but these neither constitute civilization, nor are they necessarily connected with the sources from which it springs. 3. That, insanity has a greater number of victims, in proportion to the population at present existing, than at former periods; and that this relative increase proceeds from the too palpable multiplication of the causes by which Mania is produced: the occupations, amusements, follies and vices of the present race, are infinitely more favourable for the development of the disease, than they had ever previously been with any people of this country. 4. That, there are certain classes of society, and certain courses of life, which are more exposed than others to Insanity, not because they are worldly or wicked, but because they lead to excitement, and tend to the formation of habits of thought and action, inimical to the preservation of mental serenity and health; and that the cultivators of the earth are not so liable to Lunacy as the cultivators of the mind itself; because, from accessary circumstances, the latter are most exposed to have the tranquillity and equilibrium of their mental powers destroyed. 5. That, there are more deranged persons in the wealthy than in the poor classes of society: poverty enjoins a compulsory temperance; it shuts out the longings of ambition; it acquaints mankind with the realities of life, and excludes from the vitiating effects of sentimentalism; and, in that it trains the body to be vigorous, it is favourable in all these respects to the continuance of mental sanity: the agricultural population is to a great degree exempt from lunacy: hereditary talent is the most frequent cause of this disease. 6. That, mental derangement is more prevalent under liberal than under despotic forms of government; but that, in the state, be it monarchical or republican, wherein the sources of moral agitation are most abundant, there the proportion of insane persons will be highest: the act of liberation is certainly inimical to mental peace; it operates by powerfully affecting the interests of the mass, by calling forth the deepest sympathies, the most ungovernable passions of the human breast. 7. That, the most useful and active period of life, that between thirty and forty, is more exposed than any other to the incursions of lunacy; and its activity is the predisposing cause: all the mental energies are then excited, the affections find objects, the passions are roused; and, if there be a weak or imperfect part of man's nature, it is then shaken and may be cast down in the struggle for subsistence, or for wealth, or for power, or by the anxieties which too frequently arise in the even tenour of the most humble and unambitious career: but no age is exempt from this deplorable calamity; for infants and octogenarians do become insane. 8. That marriage, with the peace and happiness which it secures, affords a protection from insanity, either by removing individuals from the influence of existing causes, or by the formation of regular habits and the cultivation of virtuous impulses, thereby rendering that influence innocuous. To woman marriage is, or ought to be, the point to which all her wishes have previously converged, and from which all her future hopes and happiness are to emanate: to man it is the shield against himself and his passions; he seeks in it, and he finds joy, solace, and support, when these fail of being furnished by his own thoughts or avocations, or by the world. When founded on harmony of dispositions, marriage creates the capabilities of enjoying comfort, and of enduring pain; it neutralizes selfish feelings and pleasures; it prevents the mind from retiring on itself; it acts as a barrier against hidden sorrows; it gives employment to his noblest qualities; and, while checquered by the ordinary vicissitudes of life, because it naturally yields no strong, or sudden, or permanent excitements, it is a powerful antidote to insanity. 9. That females are more subject to mental derangement than men, both before and after marriage; and that the causes of this are constitutional peculiarities, delicacy of frame, susceptibility of mind, and imperfect or vicious education. In many instances, this tends to arrest the development of the body; it overtasks some of the mental powers, and leaves others untaught; it is directed to the encouragement of sordid and selfish feeling; it substitutes a vapid affectation for a knowledge of the realities and duties of life; and thus, instead of imparting strength and stability, it becomes the fertile source of debility and decay. 10. That, under the existing modes of management, about one half of the insane patients are cured; that insanity conduces materially to the shortening of life; and that the autumn and winter usually prove by far the most fatal seasons to lunatics—a fact which shows the necessity of always protecting them effectually from the ungenial influences of the atmosphere and its sudden alternations.

Mr. Browne adds to the foregoing propositions, a train of highly valuable observations on the diseases wherewith lunatics are apt to be affected; on the proportions of furious, paralytic and epileptic, fatuous and idiotic, dirty and noisy, and suicidal madmen; on lucid intervals and relapses; on complete isolation, early confinement, and employment as a means of cure; on the proportion of lunatics that may be employed; on the kinds of occupation to be adopted; on its safety; and on its share in promoting the cure.

Never was there a more faithful or a more frightful representation of concentrated horror delineated by the hand of man, than is the picture of "*What Asylums were*," as exhibited in Mr. Browne's third Lecture: but thanks, immortal thanks be to the new philosophy of mind, for the blaze of divine enlightenment, wherewith it is now reviving and purifying these heretofore misused establishments. Until this burst forth, as Mr. B. declares in terms of perfect truth and eloquence, a thick and almost impenetrable veil was cast over the workings of the "mind diseased;" a sort of awe and sacredness was attached to the person of the maniac, as one on whom had fallen the hand of his Creator, visibly and fearfully, and in a peculiar manner; the precincts of his prison-house were regarded as holy and interdicted ground; and the secrets of that mysterious dwelling remained untold, or were whispered in accents of dread and reverence; but the day-spring of knowledge which is fast diffusing its cheering light on every the most distant land, has visited even the benighted sky of a mad-house, and fallen with healing energy on the hearts of those whose doom, in other days, must have been imprisonment, solitude, and despair. Pass we now, from this to a brightening scene.

"*What Asylums are*," as a topic of discourse, engages Mr. Browne's attention throughout his fourth Lecture; and, at the outset, he candidly admits that great improvements have been effected in the internal economy of these institutions. He then ascribes this result partly to selfish motives, partly to the prevalence of sounder views of the nature and treatment of mental disorders, and chiefly, so far as the metropolitan establishments are concerned, to the dread of parliamentary investigations, and the surveillance and remonstrances of the medical commissioners. His next step is to shew that the old system, with its enormities, is not yet (May, 1837) altogether exploded; that the ameliorated system commenced with the liberation of lunatics from the Bicêtre of Paris, in 1792, by the venerated Pinel, whose memory will remain enshrined for ever in the temple of heroism and philanthropy; and that, though the adoption of enlightened principles be partial, yet the desire for improvement is steadily becoming more and more prevalent.

Mr. B. notes a cursory record of the fact, which is remarkable, that it was in Egypt and Belgium, in remote times, where the recognition of humanity and occupation was first adopted as a means of treatment for the insane. Next, he adduces evidence to prove that the existing method of managing them is characterised by want of classification, want of employment, and want of bodily exercise. He then exposes the error which leads to Asylums being imperfectly heated, and the error of supposing that lunatics are impregnable to cold, and the mischievous error of habitually disregarding their personal comfort.

With much justice and good feeling, Mr. B. complains that, though corporal punishment is now professedly discontinued, yet cruelty in various forms is still committed on the inmates of mad-houses; that patients are sometimes confined to bed for the accommodation of servants; and that the number of keepers is often inadequate. His remarks on coercion are pertinent and practical, suggested by enlightened humanity, and confirmed by experience.

Attendants on the insane ought to be preferred for their character and qualifications: on this account, Mr. B. has taken great pains in defining the rules by which these persons should be selected. Having pointed out the evils of an indiscriminate association of lunatics and the grounds for separating them, he proceeds to expose the erroneous views too generally entertained respecting their moral treatment, and the great disadvantages occasioned by the want of wards for convalescents. He would not invest the commissioners for regulating Asylums with the power of visiting all such houses in the night. A proposal for adopting a measure of this kind was negatived by the legislature, in consequence of the almost unanimous opposition of the medical men who were consulted on the subject; but, he observes, such a proposal indicates two things—a total and unjust want of confidence in the probity and competency of the managers of these institutions, and a complete want of knowledge of the interests of the insane. Such visits might disclose some of the evils which it were desirable to have corrected, but it would undo all that which quiet and care had effected, by rousing every inmate to fear or fury, and thus realizing the delusions which sleep so often weakens or eradicates.

Mr. Browne is of opinion that mental anxiety and disturbance in the insane are produced or aggravated by the oppressive, harsh, indelicate and derisive conduct of keepers, and he holds it up to well-merited condemnation. For this kind of servants, but with proper discrimination, he would substitute convalescent patients: nevertheless, he does not lose sight of the important duties necessarily entrusted to such attendants, or of the difficulty of procuring well-educated persons to undertake their immense responsibility.

This lecture is completed with judicious and instructive remarks on the seclusion of lunatics, and their desertion by friends; on the unfitness of asylums for the reception of the rich; on luxurious and indiscriminate diet; on solitary meals; on the public prejudices which present obstacles to improvement in the economy of such institutions; and on the means by which these obstacles may be removed. To accomplish this last end, Mr. B. concludes, it would become necessary that all asylums should be public, and under the control of government or of parties incorporated by charter for the purpose. The great object in such a change would be, that all the proceedings of those immediately entrusted with the insane should be open to the public and to the legal authorities, and under the management of a body whose sympathies are engaged in favour of the patient rather than of his attendants. Render County Asylums perfect, elevate all of them to the rank which a few now enjoy, give them the means and the reputation of curing ninety instead of forty-two in a hundred, and increase their opportunities of affording protection and happiness to those who cannot be further benefited, and then the number of private institutions would speedily decrease; and, if the improvement were pushed sufficiently far, they would probably cease to exist; or, should this result not ensue, they must adopt the system pursued by their rivals; and, this being done, it would effect all that is desired or desirable.

Lecture the fifth demonstrates, clearly and perfectly, "*What Asylums ought to be,*" according to Mr. Browne's judgment and experience. He requires that the character of a physician to an institution of this kind, should be distinguished by benevolence, conscientiousness, courage, and high intellectual attainments highly cultivated, which he enumerates with amazing truth and eloquence. In his mind, and rightly, the site of an asylum ought to be a subject of urgent importance: every care should be bestowed on the selection, with reference to salubrity: it should possess the advantage of a dry cultivated soil, with an ample supply of water: and it should be so far removed into the country as to have an unpolluted atmosphere, a retired and peaceful neighbourhood, and yet be so near a town as to enjoy the comforts and privileges and intercourse which can only be attained in large communites. If the building be erected upon the summit or the slope of an eminence, the advantages are incalculable: to many, whose intellectual avenues to pleasure are for ever closed, the mere extent of country affords delight: to some, the beauty of wood and water, hill and dale, conveys grateful impressions: to some, the inanimate objects, the changes of season, the activity of industry, the living and moving things which pass across the scene, form a strong and imperishable tie with the world and the friends to which the heart still clings: and to all, a succession of new and varied and salutary impressions must be communicated. His plan for the construction and arrangements of an asylum, as regards the security and comfort and cure of its inmates, is quite graphic, and seems preferable in all its details. He would make it fire-proof, pad the walls, and heat the apartments by the circulation of hot water: he would surround the place with airing-grounds, shrubberies, and gardens; give the patients warm clothing, exercise them in farm-employment, and pay them for their labour—not in money, but with such objects as may be judged most acceptable to the patients, so as to gain their good-will and confidence.

Mr. Browne recommends the admission of insane persons to religious worship and instruction; not indiscriminately, however, but under careful and prudent selection. Upon certain forms of mental disease, he believes, religious teaching or ceremonies would act as a direct irritant; upon others, they would fall powerless; upon a third class, such instruction would operate as any other new scene or occupation which assisted in relieving the monotony of their mode of life; while, upon others, their influence would be altogether benign, affording a legitimate gratification to healthy feelings, directing the mind from depressing or agitating, to soothing associations, and tending to inspire with brighter and nobler hopes which disease can neither darken nor quench, which will beam on the troubled spirit amid its gloomiest delusions, as clear and certain points of guidance, like shore-lights to the storm-bound mariner. In his opinion, it is upon the discrimination of the patients to whom religious instruction is adapted, that the whole question of its utility rests.

Having exhibited in full detail, the entire economy of a Lunatic Asylum "*as it ought to be,*" and having proved, by numerous extremely interesting facts and reasons fairly based on them, that his principles are sound and his conclusions practicable, Mr. Browne completes the lecture with a representation of an establishment which presents a very decided resemblance to the institution that prospers vigorously under his own superintendence.

"In place of multiplying individual examples of excellence," he says, "let me conclude by describing the aspect of an Asylum as it ought to be. Conceive a spacious building resembling the palace of a peer, airy, and elevated, and elegant, surrounded by extensive and swelling grounds and gardens. The interior is fitted up with galleries and work-shops and music-rooms. The sun and the air are allowed to enter at every window; the view of the shrubberies, and fields, and of the groups of labourers, is unobstructed by shutters and bars; all is clean, quiet, and attractive. All the inmates seem to be actuated by the common impulses of enjoyment; all are busy, and delighted in being so engaged. The house and all around it appear as a hive of industry. When you pass the lodge, it is as if you entered the precincts of some vast emporium of manufacture; labour is divided, so that it may be easy and well performed; and so apportioned that it may suit the taste and powers of each labourer. You meet the gardener, the common agriculturist, the mower, the weeder, all intent on their several occupations, and loud in their merriment. The flowers are tended and trained and watered by one, the humbler task of preparing the vegetables for the table is committed to another. Some act as domestic servants, some as artizans; some rise to the rank of overseers. The bakehouse, the laundry, the kitchen, are all well supplied with indefatigable workers. In one part of the edifice are companies of straw-plaiters, basket-makers, knitters, spinners, among the women; in another, among the men, are weavers, tailors, and shoemakers. For those who are ignorant of these gentle crafts, but are strong and steady, there are loads to carry, water to draw, wood to cut; and, for those who are both ignorant and weakly, there is oakum to tease and yarn to wind. The curious thing is, that all are anxious to be engaged, toil incessantly, and in general without any other recompense than being kept from disagreeable thoughts and the pains of illness. They actually work in order to please themselves, and having once experienced the possibility of doing this, and of earning peace, self-approbation, the commendation of all around them, sound sleep, and sometimes a small remuneration, a difficulty is found in restraining their eagerness and moderating their exertions. There is in this community no compulsion, no chains, no whips, no corporal chastisement, simply because these are proved to be less effectual means of carrying any point than persuasion, emulation, and the desire of obtaining gratification. But there are gradations of employment. You may visit rooms where there are ladies reading, or at the harp or piano, or flowering muslin, or engaged in some of the manifold ornamental productions in which the female taste and ingenuity are displayed. You will encounter them going to church or to the market; or returning from walking, riding, and driving in the country. You will see them ministering at the bed-side of some sick companion. Another wing is occupied by gentlemen who can engage in intellectual pursuits, or in the amusements and occupations of the station to which they belong. In all probability, the billiard-room will present an animated scene. Adjoining apartments are used as news-rooms, and the politicians will be there, under restrictions from disputation. You will pass those who are fond of reading, drawing and music, scattered through handsome suits of rooms, furnished chastely but beautifully, and looking down upon such fair and fertile scenes as harmonize with the tranquillity that reigns within, and tend to conjure up images of beauty and serenity in the mind which are akin to happiness. But these persons have pursuits, their time is not wholly occupied in the agreeable trifling of conning a debate, or gaining so many points. One acts as a transcriber, another is engaged in landscape-painting, a third undertakes a course of historical reading and submits to examination on the subject of his studies, and a fourth seeks consolation from binding the books which he does not read. All, in short, are so busy as to overlook, or are so contented as to forget, their misery."

With the preceding account of his Lectures for testimony, it may be affirmed that this work of Mr. Browne's is excellent in all respects: both in design and execution, it justly merits the highest commendation: to general readers, it discloses and offers a rich treasure of philosophical and medical instruction: and it is with extraordinary zeal, as well as extraordinary success, that he has executed his self-allotted endeavours to excite and guide the sympathy of those who are blessed with a sane, a benevolent, and a cultivated mind, to assist in ameliorating the condition of their fellow-beings who may be suffering the afflictions of Insanity. He has been the first to engage in an attempt to condense, in a plain and practical, *but still popular*, form, the results of observation on the treatment of Mental Derangement, for the specific and avowed purpose of demanding from society an associated effort to fulfil this duty, so distinctly enjoined by the divine ordinances of reason and religion. The purity and disinterestedness of his motives are evident upon every page of his volume: and they evince clearly that, in conducting a very careful and candid examination of his subject, he has been actuated by a profound sympathy for the misfortunes of the insane, and with a keen feeling of indignation that these misfortunes should often be multiplied through the apathy, or the ignorance, or the cruelty of those who have it in their power to become benefactors in the noblest cause that can arouse a virtuous emulation.

THEORY OF THE PRICE OF CORN.

I ASSUME that it is the great and beneficial purpose of periodical works, which profess to be devoted to the diffusion of knowledge, that they should not only be employed in the publication of established facts and new discoveries, but that they should, under suitable restrictions, be made the vehicles of speculation, the media of liberal controversy where opinions may be adverse or disputable.

Under this assumption, I venture to solicit a space for the following communication, to which I wish to call the special attention of political economists, and still more especially that of the enlightened portion of agriculturists. I am happy to observe that this class of the community is increasing, and that they must shortly occupy that intellectual position which their primary importance requires: not that I think the statement here advanced of exclusive import to these classes, but that it will be found worthy of the regard of all ranks and interests.

Mr. John Taylor, an acute, sober, original, speculative writer, has, in a small work entitled *A Catechism of the Currency*, introduced a chapter On the Theory of the Price of Corn, which contains the following (to me) novel facts.

In this work it appears that there is a steady fixed *natural* price of wheat, which, in reference to the precious metals, did for a length of time, and over an extensive region of various countries, maintain an extraordinary uniformity or equality. To make this intelligible I shall give the details, with a view to extend the range of their publicity, and still further to expose them to that rigid scrutiny which shall either determine the fallacy or solidity of the theory therein deduced.

The *natural* price of wheat is thus ascertained and established:—It appears that "the labour and skill employed in bringing to England from its native mines the quantity of gold and silver contained in 33*s*. 6*d*. is supposed to be equivalent to the labour and skill employed in producing and bringing to market from the soil of England one quarter of the finest wheat: because that sum is found to be the price of a quarter of the finest wheat in this country, taking the average of a number of years under the lowest amount of taxation, and because it is also found to be the price of the finest wheat in the continental markets, taking them one with another, for a series of years."

Are these statements hypothetical or true; suppositious or demonstrable; contingent or inevitable? The beauty, utility, and permanence of the superstructure must depend on the solidity of the foundation.

To continue the quotation:—" To this *natural* price of wheat must be added that degree of *artificial* price which is called for by the taxation to which the English farmer is subject. Supposing that taxation to be estimated by the amount, for the time being, of the national debt, it appears, from the price which has been paid for corn since the commencement of the debt, more than a century ago, that 1*d*. per quarter for each million of debt is required to be added to the *natural* price (33*s*. 6*d*.), in order to give the English farmer as fair a remuneration, *with* taxation, as 33*s*. 6*d*. is *without*. The following statement will show that this addition is not too large an allowance:—

"At the Revolution in 1689, the national debt was below a million; viz.,	£ 664,263
In 1697 it amounted to	21,515,742
1701 it was reduced to	16,394,701
1715 it was increased by war to	53,681,076
1739 it was reduced by peace to	46,954,623
1748 it was raised by war to	78,293,313
1764 it was raised by war to	139,516,807."

I shall continue the statement in the author's own words:—" From 1689 to 1764 the price of the finest wheat should have risen from 33*s.* 6*d.* to 45*s.* 2*d.* per quarter to keep pace with the debt. According to the audit books of Eton College, 33*s.* 10*d.* was paid in 1688–9 and 44*s.* 9*d.* in 1763–4!

" But these prices, it may be said, may have been accidently coincident.

" Let, then, the average of each period of the debt be taken, and the mean of all the averages. This gives for the whole period of seventy-six years, from 1689 to 1764, a price of 37*s.* 6*d.* per quarter, and the average price for the same term paid by Eton College was 37*s.* 9*d.* per quarter!

" In 1775 the debt was reduced to	£129,146,322
1784 it was raised by the American war to	249,851,628
1793 it was reduced to	239,350,148

This last sum required the price of 53*s.* 6*d.* per quarter, and the price paid by the College was 54*s.* 4*d.* for 1792–3! Taking the average of each of these periods, and the mean of the three sums, the price ought to have been for the twenty-nine years, from 1765 to 1793, 49*s.* 4*d*; and the price paid on an average of the whole term by the College was 49*s.* 5*d.*!

" During the late war, the debt rapidly increased, especially after 1797, and the price of corn rose with it, at one time higher than its just proportion, owing to our obstructed intercourse with the continent; but in the long-run the debt overtook it, so that it did not finally exceed its proper limits. The debt was highest in 1816, when £864,822,540. required the price of 105*s.* 6*d.* per quarter, and the price paid by the College in the two years following was 107*s.*! Taking the average of every year of the debt, from 1794 to 1820, in which latter year it was £843,388,804., the price required for these twenty-seven years was 87*s.* per quarter, and the price paid by the College was 87*s.* 10*d.*! For a part of this time, viz. twelve years from 1809, when the debt was £650,013,362., to 1820, when it was £843,388,804., the average required was 97*s.* 8*d.*, and the price paid was 98*s.* 9*d.*! To sum up the whole briefly, the comparative result stands thus:—

" SINGLE YEARS.

	s.	*d.*		*s.*	*d.*
" Price required in 1689	33	6	Price paid in 1688–9	33	10
Ditto ditto 1764	45	2	Ditto ditto 1763–4	44	9
Ditto ditto 1793	53	6	Ditto ditto 1792–3	54	4
Ditto ditto 1816	105	6	Ditto ditto 1817–8	107	0

The entire difference being 2*s.* 3*d.*, averaging about 7*d.*

AVERAGE OF LENGTHENED PERIODS.

Average required for	s.	d.	Average paid for	s.	d.
76 years, from 1689 to 1764...	37	6	76 years, from 1689 to 1764...	37	9
29 years, from 1765 to 1793...	49	4	29 years, from 1765 to 1793...	49	5
27 years, from 1794 to 1820...	87	0	27 years, from 1794 to 1820...	87	10
12 years, from 1809 to 1820...	97	0	12 years, from 1809 to 1820...	98	9

The entire difference, 2*s.* 11*d.*, averaging about 9*d.*; difference of 132 years, 1*s.* 2*d.*, averaging not quite 5*d.*"

I make no apology for the length of the previous quotations. To abridge, would have been to mutilate them. There stand the facts on which Mr. Taylor's theory rests. Whether the inference he has drawn be correct and legitimate or not, I presume not to determine. That a coincidence in the totals and a series of coincidences in detail, should have proved so undeviating through a period of upwards of 130 years in all the various states of peace and war, good and bad seasons, plenty and scarcity, restriction and free importation, &c. &c., without some intimate connection of cause and effect, is an astonishing, almost miraculous circumstance, scarcely to be parallelled. Should they be the result of mere chance, it may be asked, through what duration of time must a regular order of concurrent events pass, which shall warrant the unquestionable conclusion of their being connected as cause and effect? On the other hand, in this case, it may be asked, are there any discrepancies in that extended period sufficient to counterbalance the concordances herein stated, or to impeach the correctness of the deduction? These I confess are moot points that appear to be worthy of the strictest investigation. Strong as the presumption is in favour of the theory, and much as it may be wished to be true, still it *may* be unsubstantial. Its truth or fallacy ought to be ascertained beyond a doubt. If it be established it will confirm, above all dispute, the propriety of holding to a quarter of Wheat as the most steady *standard of value.* Would that we could obtain a *measure of value* equally inflexible. This appears to be a *desideratum,* but is it attainable? And, if attained might it not help to put an end to those periodical visitations of panic which occasionally convulse the mercantile world? If such would be the result what efforts ought not to be perseveringly pursued, until the benefit be secured. Agriculturists, manufacturers, merchants, are all equally interested in so desirable an acquisition.

Stedfast and uniform as the mutual increase continued during 130 years, it has been for some years and is now very seriously disturbed. This disturbance, which has proved a weighty and continued injury to the farmer, M. Taylor attributes (justly or not, I pretend not to decide) to Peel's Currency Bill; for the repeal or modification of which, he is an ardent and powerful advocate.

On taking a retrospect of the progress of the debt, it may be noticed, that it receded or diminished at four distinct periods during the epoch of 130 years. These recessions in each of the two latter instances amounted to upwards of ten millions, and appear to have been effected at the rate of about one million per annum. It may be naturally asked, was this slow and small recession followed by a correspondent diminution in the price of wheat? An affirmative answer to this would evince the extreme subtlety of the connexion, and of course strengthen the assumed theory. A negative answer would by no means invalidate it, the difference being only ten-pence a quarter or about one fifty-fourth part of the then current price, a change which might be counteracted by temporary causes. It is also possible that by the time the effect could be produced, a reflux might have taken place.

I confess that I feel myself somewhat bewildered if not enthralled by this specious theory; at the same time I cannot overcome some sceptical doubts of its truth. Gainsay the statements, and the theory perishes. If they be proved to be correct, it will not absolutely ensure its stability. There is, in that case, a bare possibility, that the concurrence, long, intimate, and regular as it appears, may not be invariably linked. In this maze of perplexity, I cannot come to a satisfactory decision. I wish I could.

I must here close these desultory remarks. My primary object is to give Mr. Taylor's project a wider expanse of publicity; I hope for his benefit, by exciting a curiosity to peruse the whole work, which, independent of the foregoing ingenious and original speculation, abounds with others equally admirable and interesting.

I trust among the numerous and intelligent readers of *The Analyst* some will be found who will subject the theory to the severest inquisition, and give us the result; that the question may be set at rest. If my communication produce this effect alone it will do good, and my time will not be wasted. If the various queries and suggestions I have thrown out on this dry but important topic should elicit further communications, still more benefit will result to the public; my purpose will be gained, my ambition gratified.

G. B.

OBSERVATIONS ON THE DIFFUSION OF SCIENTIFIC KNOWLEDGE IN LARGE TOWNS.*

BY E. P. BLAKISTON, M. D., OF BIRMINGHAM.

THERE are certain periods in the lives of all men, when it would seem to be no less advantageous than proper to review their past actions and scan their present position, for the purpose of examining whether they have been drawn aside from those principles which their judgment has approved, and whether a change of situation may have called for new duties which it is important they should not neglect. This self-examination, which has been considered by the wise and good of all ages as wholesome and necessary to individuals, is no less so to public bodies or classes of society, and would seem to be especially required on the part of the influential inhabitants of this town at a time when it is on the eve of becoming the centre of inland communication, and when we are called upon to prepare for the reception of a most distinguished scientific body, which may be expected, at no distant period, to hold its meeting here. Allow me then, for a few moments, to direct your attention to the past and the present state of this place.

In reviewing the events of the last thirty years, we cannot but be struck with the extensive changes that have taken place. Engine after engine has been erected, manufacture after manufacture introduced. Places of public worship have been multiplied, and splendid edifices have risen within the town itself, while its environs have become studded with elegant and substantial dwellings. The abodes, too, of the humbler classes have undergone material improvement, so that, as regards their ventilation, cleanliness, and convenient arrangement, they vie with, if they do not surpass, those of any other town containing an equal population.

These are strong proofs of the increase of riches and prosperity. Immense wealth may not have been accumulated by individuals, but (which is better) there has been a large addition to the number of those who, by their industry and talents, have raised themselves to independence and comfort. The number and extent of the societies which have risen up for the encouragement of the arts or the advancement of science, show that taste and refinement have in some measure kept pace with the increase of comfort and wealth.

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* A Lecture delivered at the Birmingham Philosophical Institution.

Satisfactory as is the improvement in these respects, it is less important than that which has taken place in the moral character of the working classes. Within the memory of many, their meetings were characterised by a fearful spirit of violence and outrage. With two exceptions, however, one of which, I am sorry to say, was recent, and which cannot be too deeply regretted or too strongly condemned, no loss of property has resulted from their assemblage in periods of excitement or distress, during the last thirty years. This improvement in the feelings and habits of the labouring classes is further shown by the increase in the amount of deposits in the Savings' Bank, and by the number and extent of the provident institutions now existing—proofs the most conclusive that could be adduced.

It would be an interesting task to trace the various causes that have concurred to produce such beneficial effects as those which I have enumerated; but it would be foreign to my present purpose to do so: one or two, however, of the most obvious must not be omitted. It will at once be acknowledged by all, that the great increase of our manufactures and riches has mainly and directly flowed from the improvements in the Steam Engines effected by the late Mr. Watt, whose name will always be had in honour among all who are capable of appreciating the benefits derived from his persevering ingenuity. By this means the natural product of the neighbourhood, Coal and Iron, were at once turned to a much larger account than they had ever been. But this direct cause arose out of another more extensive in its operations, I mean the diffusion of knowledge. At the time he made the discovery which led to his improvement in the Steam Engine, Jame Watt was residing as a mathematical instrument maker at Glasgow, where the diffusion of scientific knowledge had made some progress, and where he had come within its range, and had thus been prepared for making the discovery which led to such stupendous results.

Again, it is well known that for many years the children of the working classes of this town have been highly favoured with the means of religious instruction; and this will be said to be the chief cause of the moral improvement that has taken place amongst them. Unquestionably it is. Religion is the highest branch of knowledge, that which supplies us in the pages of Revelation with a sure guide during life and a bright hope in death. And here I cannot withhold the meed of praise from those persons who, at an early period in the history of Sunday Schools, were so deeply impressed with their importance and utility, that they established them in this town on an extensive scale. To the end of time their beneficial effects will be felt.

The history of man in all ages and countries forbids our attributing the happy change I have alluded to as having taken place in the conduct of the working classes when assembled in periods of excitement or distress, to the counsels or restraining influence of others, for even the most heroic self-devotion, and the most fervid eloquence, have failed to allay the fury of an excited populace devoid of education. No: the cause is to be found in the moral improvement which has taken place among the mechanics themselves—the result of education; which, while it has enabled them better to discriminate between sophistry and truth, and between declamation and argument, has assisted them to restrain their passions, and has taught them to respect the laws.

But the position of individuals or communities is not merely to be judged of by what it has been, but by what it ought to be; and we must constantly endeavour to bring it nearer and nearer to such a standard; enquiring whether additional exertions may not be required in order to secure and increase the advantages already attained. Thus, the present state of this town looks well when compared with the past. But is it not still very far from what we could wish it to be? Has the increase in the number of the places of public worship kept pace with that of the population? Are the scientific institutions conducted on a scale suited to so large and important a town, and furnished with well-stored museums, accessible to all classes? Are we surrounded by airy and pleasant public parades, in which the mechanic and his family can enjoy wholesome and innocent recreation? Do we still encounter profligacy and drunkenness in our streets? and do not their appalling effects fall under our daily observation? Is not the town, at this moment, swarming with the victims of improvidence? And are not a large number totally unacquainted with a knowledge of even reading and writing, the tools necessary for working out mental improvement? There remains obviously much to be done, to which what has already been accomplished bears but a small proportion.

I have alluded to the probability of our town being visited before the expiration of two years by an assemblage of eminent men connected with the British Association for the Advancement of Science. While they will contemplate with interest our growing manufactures and our stupendous railroads—while they will gaze with delight on the architectural beauties displayed in two of the most chaste and elegant buildings of the age, and while they will recall to their minds the philosophical labours of Priestley and of Watt—they will not fail to enquire what steps we are taking to elevate the mass of the population below us by the diffusion of the knowledge which has already been acquired, and what facts we are collecting which may serve for the discovery of new truths in the various departments of science.

I have said, too, that this town is on the eve of becoming the centre of inland communication, by the completion of that stupendous work, the Railway between Liverpool and London ; and this, there can be little or no doubt will soon be followed by others which will ramify to all the principal points of the island. It is impossible to hazard a conjecture as to the whole effect this may have upon our town, or to assign a limit to the importance which it may thus attain. At this moment the eyes of all are directed towards it ; and strangers will soon flock in from various quarters, and they also will inquire into the progress we are making in the work to which I have alluded.

In the slight sketch which has thus been drawn of the past and present state of this town, the effects of the diffusion of knowledge may be clearly traced in the improvement which has taken place, and we may therefore naturally expect that the future advancement of civilisation may be much hastened by the same means. The importance of the subject, then, coupled with the fact that we are about to be put upon our trial before a tribunal of Science, renders an apology for bringing it under your notice on this occasion unnecessary. It may be said that none *now* dispute the utility of knowledge, either on moral or political grounds. But, alas ! we do not always practice what we know to be useful and right ; few deny the authority of Revelation, but many neglect to follow its injunctions. We require " line upon line, and precept upon precept."

There are some amongst us who have long felt the importance of this subject, and have been long labouring to elevate the moral feelings, and improve the minds and habits of the working classes. I cannot hope to teach such persons, but I may perchance strike a corresponding chord in their minds, and recall by association long forgotten, trains of pleasurable feelings, while I enlarge upon the *advantages, duty, and means of diffusing scientific knowledge.*

I.—Among the *advantages* arising out of the diffusion of knowledge, those which are attendant on religious instruction are too obvious and too fully acknowledged to require any demonstration. The knowledge of the will of Him to whom we owe all our blessings, is indeed an advantage which puts all others far out of the reach of comparison. It is not, therefore, as undervaluing its importance that

I do not now dwell more particularly upon this subject, nor would I forget for one moment, nor have any who do me the honour to listen to me forgot, that Science is most useful and most honourable when she appears as the hand-maid of Religion. In this connection, and in this subordination, so to speak, I proceed to treat of scientific knowledge, as explaining the phenomena of Nature and the duties of society.

The manual labour required in most trades may be performed by persons perfectly unacquainted with the laws of science, and even some kinds of mental labour may be accomplished by the same class of persons, as has been well shown by Mr. Babbage, in his work on the *Economy of Manufactures*. Those, however, who arrange and plan the work must know something more; and those who invent processes or machinery must be acquainted (practically at least) with those laws of science on which their conclusions depend. Thus, the most eminent mathematicians formed a Section for the purpose of determining the best formulæ for the famous French Logarithmic Tables; these formulæ were then delivered to a second Section, tolerably well versed in mathematics, who, having turned them into numbers, handed them over to the last Section for completion by simple addition. It is evident, then, that for all but the commonest purposes, scientific knowledge must be advantageous. There is not a domestic process, however simple, in which some scientific principle is not involved, and in which, consequently, an acquaintance with such principles may not prevent an error or suggest an improvement. A farmer having once manured his land with lime was surprised to find a decrease in its produce. He mentioned the circumstance to a gentleman acquainted with chemistry, who, having procured some of the lime, submitted it to analysis, by which means he discovered that it had been made from magnesian limestone. The cause of the failure in the produce of the land became immediately apparent, magnesia being injurious to the growth of vegetable substances on some soils. The great French chemist, Lavoisier, took a quantity of land into his own cultivation, and having analysed the soil, and applied such substances to improve its quality as his chemical knowledge suggested, he succeeded in doubling its produce in a short time.

Thus, were the knowledge that *now* exists generally diffused, and did it penetrate to the lowest grades of society, we might expect that the land of the farmer would become more productive, and that the goods of the manufacturer would be better made; in short, that all those articles which minister to the wants and comforts of man would be produced of a better quality and in greater abundance than they are at present.

Again, the diffusion of present knowledge may be expected to lead to *new discoveries.* By this means the number of philosophical inquiries is increased; for although the desire for knowledge may at first be small, yet it soon increases, and finds no such gratification as in the discovery of new truths. Some persons, however, have a natural aptness to invent; and were they not made acquainted with what is already known, they would be continually directing their thoughts and efforts into channels which had been previously explored. It is by no means uncommon to witness the display of very great ingenuity and talent on the part of a mechanic, in the invention of a process or a piece of machinery which has already been some time at work in a distant part of the country. Such a misdirection of talent and industry would be prevented by the diffusion of scientific knowledge. But, perhaps, its greatest value consists in its preparation of the working classes for becoming discoverers. To use the language employed in the preliminary treatise of the Library of Useful Knowledge, "It gives every man a chance, according to his natural talents, of becoming an improver in the art he works at, and even a discoverer in the sciences connected with it. He is daily handling the tools and materials with which new experiments are to be made, and daily witnessing the operations of Nature, whether in the motion and pressure of bodies, or in their chemical action on each other. All opportunities of making experiments must be unimproved, all appearances must pass unnoticed, if he has no knowledge of principles; but with this knowledge he is more likely than any other person to strike out something new which may be useful in art or curious and interesting in science. Very few discoveries have been made by chance or by ignorant persons; much fewer than is generally supposed." The writer, after adducing proofs of this, and referring to discoveries made by persons of competent knowledge who were in search of them, adds, "In so far as chance has any thing to do with discovery, surely it is worth the while of those who are constantly working in particular employments to obtain the knowledge required, because their chances are greater than other people's of so applying that knowledge as to hit upon new and useful ideas; they are always in the way of perceiving what is wanting, or what is amiss in the old methods, and they have a better chance of making the improvements. In a word, to use a common expression, they are in the way of good luck, and if they possess the requisite information, they can take advantage of it when it comes to them."

It is thus that many great inventions have been made, and that many great men have raised themselves from very humble stations —Arkwright, John Hunter, and Sir Humphrey Davy are striking examples. Is it not reasonable to expect that such instances will be multiplied, as scientific knowledge is more extensively diffused? This town contains a vast number of artisans whose superior intelligence and activity have raised them above their fellows. Such men are exactly in a situation to profit by any scientific information which may be thrown in their way. Endowed by Nature with quickness of apprehension, receiving fair wages, and not so fatigued with their daily occupation as those occupied in the drudgeries of the manufactories, they have some time, money, and talent to bestow upon the cultivation of science.

From the labours of such men as these much good may arise to our town, and much evil may be warded off from its trade; for from them may originate such improvements in machinery and in the economy of manufactures as shall enable us to retain that place in the great markets of the world which we have so long held, but from which some think we may be one day driven by foreign competition.

But scientific knowledge, in penetrating to the working classes, must pass through that of manufacturers; and it is to be hoped that, like light traversing diaphanous bodies, it may leave some of its rays behind it; for among this class have arisen great discoverers. Two elementary substances, iodine and bromine, were respectively discovered by a manufacturer of saltpetre and a working chemist; and it was Dolland, the optician, who, finding that a lens made of one kind of glass decomposed the white light that passed through it into its primitive colours, the distances between each of which were greater than when it passed through one made of another kind of glass, formed such a combination of these different lenses that the light which had been decomposed by some was recomposed by the others, with only a partial loss of the refraction, by which the apparent sizes of objects are increased. He thus succeeded in producing magnifying glasses through which the light passed to the eye in a state of achromatism, *i. e.* devoid of colour; a circumstance which Newton had supposed could never take place. The French are fully alive to the advantages which must result from their manufacturers receiving a scientific education. There are, in Paris, no less than three public laboratories, furnished with the most costly apparatus, and superintended by the first chemists of the age, which are open to all those students who by their industry and good conduct have rendered it probable that they will make a good use of such advantages; and in the private laboratories of that city are to be seen numerous students who are destined for those trades in which a knowledge of chemistry may be in the remotest degree useful. The most brilliant examinations in chemistry are said to be passed by young men in this class of embryo manufacturers. A country which thus holds out encouragement for the cultivation of science by all classes, not merely in the one department to which I have more especially alluded, but in all, may well boast of having raised many philosophers from the humblest ranks of life.

We have now to notice another advantage arising from the diffusion of knowledge—the improvement of the mind, feelings, and habits. This is an effect which knowledge can scarcely enter the mind without producing in some degree; at least, the exceptions to such an effect are rare. While there are many whose talents and acquirements may be placed on a level with those of Voltaire, there are few, it is to be hoped, by whom they are used for such vile purposes as were those of that bad old man. The inhabitants of large towns are strongly tempted to spend their leisure hours in frivolous amusement or noisy revelry. Fatigued with the labours of the counting-house or the workshop, they too often seek for relief in such pursuits; but could they be induced to have recourse to the stores of science, how great an advantage would be gained! For an account of its pleasures, I would refer them to the preliminary Treatise of the Library of Useful Knowledge; and strange indeed must be the constitution of that mind which cannot find something to its taste there. In acquiring knowledge, man gains power both over matter and mind. It makes the elements minister to his use, as was forcibly pointed out by your President, in his late admirable lecture; and in addition to the instances adduced by him, I might tell you that it made a few pounds of water tear up by the roots the largest trees, and exert a pressure limited only by the strength of the materials of which the engine (Bramah's press) is constructed; and which was also the invention of a manufacturer. This has been done by the application of the principle that fluids exert an equal pressure in all directions, owing to the mobility of their particles.

But knowledge endows man with power of another kind. It tends to moderate his passions, and aids his intellectual faculties in asserting that superiority over his animal propensities which his Creator intended they should maintain.

Nor is science limited to the explanation of the laws of Nature, but embraces also, in subordination, as I have said, to Religion, those which should regulate society. By this branch the lower orders are taught the absolute necessity for the existence of different classes of society; and the duty incumbent on those who are not possessed of the accumulated fruits of industry, to provide for their own wants, alike present and prospective, by the labour of their own hands. Hence they are induced to attach themselves to Provident Institutions, calculated on sound principles, with a view of providing against the necessities of sickness and old age. The beneficial effects produced upon their character by the independence thus engendered are truly astonishing. They learn to respect themselves, and feel that they have a strong interest in the preservation of social order. No longer,—if I may borrow, without irreverence, the language of Holy Writ—no longer, " tossed to and fro by the sleight of men, and cunning craftiness whereby they lie in wait to deceive," they do not run after changes in the vain hope of bettering their condition, but advocate such only as their judgment has shown to be rendered necessary by the course of events, and such as they are prepared to recommend by solid argument rather than by physical force. " Every hour," says Dr. Chalmers, " that a workman can reclaim from the mere drudgery of bone and muscle, will send him back to his workshop and his home, a more erect and high-minded individual."

It cannot be denied that the acquisition of scientific knowledge by mechanics has, in some instances, tended to unsettle their minds, and make them feel above their work; and on this account some have thought it impolitic to place it within their reach. The soundness of such an inference may, however, be doubted. As long as knowledge shall be imperfectly diffused, so long will those who have profited by it be raised above those who have not, and will think that the latter alone should be employed in the drudgeries of life; but when it shall have become more uniformly diffused, the difference betwen individuals will be less, and although there must always be inequalities, the pride in one will be held in check by the increased numbers of competitors with himself. Be this as it may, " the question is no longer," as it has been justly observed by Lord Brougham, " whether or not the people shall be instructed—for that has been determined long ago, and the decision is irreversible—but whether they shall be well or ill taught—half-taught, or as thoroughly as their circumstances permit, and their wants require. Let no one be afraid of the bulk of the community becoming too accomplished for their superiors. Well educated, and even well versed in the most elevated sciences, they surely may become; and the worst consequences that can follow to their superiors will be, that to deserve being called their *betters*, they too must devote themselves to the pursuit of solid and refined learning." Such an effect would prove an advantage of no mean order. When the upper classes are pushed on to higher mental cultivation by the elevation of those below them, they must be said to gather the fruits of their own sowing; so true is it that we can hardly benefit others without benefiting ourselves. Those of them who shall take upon themselves the office of instructors will derive an additional advantage; for the knowledge acquired in preparing ourselves for the instruction of others is most precious; because, in looking for the most simple and satisfactory explanation of difficulties, we must ourselves entirely overcome them, and view the subject in all its different bearings.

II. *The duty of diffusing scientific knowledge* is one which we owe to our *Maker* and to *society*.—If we are grateful to our Maker for all the blessings he has bestowed upon us, is it not our duty to exalt Him among our fellow-creatures, and to make known His attributes of wisdom and goodness; which, while they are pourtrayed in the pages of Revelation, are similarly developed in every work of Nature? "The heavens declare the glory of God, and the firmament showeth His handy work. Day unto day uttereth speech, and night unto night showeth knowledge. There is no speech or language where their voice is not heard." We have all heard that voice; it has reached us in the still, calm hour of night, when we have gazed on the countless host of heavenly bodies, and our thoughts have been called upward to Him who hath set his glory above the heavens; but how has that voice deepened, how thrilling have been its tones when we have contemplated those bodies through the glass of Science, and have learnt somewhat of their number and extent, of the almost immeasurable distance from each other at which some of them are placed, and of the wonderful manner in which they revolve, and retain their relative positions by the forces that the Creator has impressed upon them. Our faculties are unable to fathom the whole depth of the power and wisdom of God which these views partially display; and as to his goodness and providential care of His creatures, there is not a common operation of Nature in which they cannot be demonstrated by the explanation of its causes afforded by Science. Thus, in winter we observe the surface of the water becoming frozen, and after a certain time resuming its usual form. We are taught by Science that in this process there is an exception to a general rule, that bodies contract by the loss of heat; for, at about eight degrees above the freezing point, the water at the surface, in preparing itself for crystallization, expands, and becomes lighter than that which is below it; in consequence of which it remains at the surface, and being a bad conductor of heat, it preserves the deep water in large rivers, lakes, and seas from being frozen. From the same source we learn that the suddenness of the transition from heat to cold, and the converse, which might be expected to take place during sudden frosts and thaws, and which would prove greatly injurious to our health, is moderated by the latent heat of fluidity being given out by the water as it crystallizes into ice, and being re-absorbed when it returns to a state of liquefaction. In the Polar regions, where it is necessary to the existence of the animals who inhabit them that their internal heat should be kept as much as possible from radiating to the surrounding cold substances, we find them provided with skins of such colours and materials as are most opposed to the passage of caloric; and the breasts of aquatic birds, which in swimming are constantly exposed to the action of fresh particles of cold water, are defended by thick down, which, owing to the extreme fineness of its feathers, proves almost a perfect non-conducting substance, and thus opposes a strong barrier to the abstraction of heat from the body. It is thus that Science, in unravelling the mysteries of Nature, unfolds to our view the wisdom, power, and goodness of the Almighty Creator. The harmony of nature is not the least extraordinary part of this view. The different phenomena seem to arise one out of the other, and to keep each other in equilibrio. The grand miracle is the formation of Nature; the framing of that universal machine which regulates itself according to certain fixed laws that have been appointed for it. A watch of ordinary construction is a surprising and beautiful piece of mechanism, but with every great change of temperature it requires the regulating fingers of its owner. But there are others in the construction of which the principle of the unequal expansion of different metals by heat has been so introduced, that they regulate themselves, and will record the time in the course of a whole year to within half a second. Now, supposing by means of such a chronometer, we had, under very perilous circumstances at sea, been enabled to calculate our distance from land, and steer our course with such nicety as to escape an almost inevitable danger, should we not be constantly talking of this instrument, exhibiting and explaining its construction to our friends, and referring to its maker as being, under Providence, the protector of our lives? Just so, with the same zeal, I mean, and in the same spirit, are we bound to unlock the book of Nature with the key of Science, and to circulate its truths far and wide amongst those for whose benefit it has been written, not less than for our own.

It is a duty we owe to *society*. We are not isolated beings, but are dependent upon each other for every comfort in life. Hence there are certain duties which we owe to one another. That before us may be deduced from the advantages which we have seen to arise from its proper performance. If from the diffusion of scientific knowledge flows an increase of those things which contribute to the comfort and happiness of all—if the social feelings be improved, and civilization be raised to a higher point than that at which it had previously stood—then it is our duty to extend these advantages by every means within our power.

Society includes ourselves. The evils which result from ignorance are not confined to those persons with whom they originate, but radiate on all sides. Like some pestilential diseases which are engendered, or at least, are rendered malignant by a want of cleanliness, they may eventually scourge all classes of society. The Bohemian peasants rose up and murdered some of their nobles at the time the cholera appeared amongst them, under the belief that they had poisoned the springs of water. What a contrast to the conduct of the inhabitants of this town and of Edinburgh! who *all* united to employ the most rational means of prevention; and so successful were their efforts, that in this place the disease never obtained a footing; and in Edinburgh, although it broke out several times, it never spread to any great extent. It is a duty, then, we owe to *ourselves* to check the evils arising from ignorance, and to promote the blessings which flow from its removal, but diffusing widely the light of Science.

III. It now only remains for me to touch upon the *means of diffusing scientific knowledge*, which may be divided into *early education*, and the *instruction of adults*. Education cannot be commenced too early, if it be conducted upon proper principles. To control the passions, and cultivate the best feelings of the heart,—greatly to exercise the memory, and at the same time to refrain from *forcing* the reasoning faculties of the infant,—should be the care of those who undertake their instruction. A warm heart and a sound head are alike required, with perfect command of temper, and unflinching firmness of purpose. Parents who can engage the affections, and whilst they excite a curiosity after knowledge, can gratify it in a pleasing manner, are the most natural instructors of childhood. When, however, they are either incompetent to the task, or are engaged in manual labour, infant schools are of great value, providing the greatest care and consideration be bestowed upon the choice of those who are to conduct them. Early education forms the foundation necessary for raising a superstructure of scientific knowledge. By it the use of the necessary tools, reading and writing, is acquired, the memory is exercised, and the expansion of the intellectual faculties is carefully watched and gently aided. But something beyond this may be effected. There are many things connected with natural history which may be advantageously pointed out and explained to children; such as the adaptation of the forms of animals to their habits and wants, as exemplified in the webbed feet of aquatic birds, and the long beaks of woodcocks and similar birds, which enable them to penetrate marshy ground in search of their food; and the teeth and feet of animals of prey, as compared with those which are herbivorous. In a thousand ways of this kind the infant mind may be imbued with a taste for scientific pursuits. But the science of religion is that which it more especially behoves us to bring before children. We cannot make them understand its mysteries or doctrines, but we may exercise them in its discipline, and may make them acquainted with the touching histories of that sublime and vivifying Revelation which may in after years prove a "light to their feet and a lantern to their paths." *Thus* to instruct youth is a task of hope and joyful anticipation. As we witness the blending of religious impressions with the sunny dreams of childhood, we feel assured that when those dreams are recalled in after life, by the power of association, these impressions shall accompany them. They may either grow with the strength of our child into fixed and governing principles of action, or having been smothered for a while by impressions of an opposite nature, they may yet again burst forth, and bring peace to his mind. To the parent who, with mildness and gentleness, has endeavoured to associate religious thoughts with the expanding feelings of youth, how consolatory must be the hope that they will, sooner or later, produce their effects, and ensure him a union with his child in that place where sin and sorrow shall for ever cease. From these considerations it follows that early education is a subject of the deepest importance, and that it forms a material part of that system which is calculated to improve the condition and raise the character of the inhabitants of large towns. The attention of the legislature seems at length turned to the subject, and I cannot but hail with delight that clause in the bill which has been introduced by Lord Brougham, whereby provision is made for the instruction of the young in the whole unmutilated volume of Divine Revelation. It is to be hoped, however, that whatever may be the efforts of the legislature, those of individuals or public bodies will not relax; but that each man in his family, and each sect in their congregation, will strain every nerve to raise the standard of religious affection and moral intelligence in the rising generation.

The *instruction of adults* may be forwarded by *cheap works, class teaching,* and *public lectures.* The publication of cheap works has increased in this country, of late years, in an extraordinary manner; and while the price has been reduced the quality of the matter they contain has been much improved. The Saturday's and Penny Magazines, the Mechanic's Register, and the Numbers published by the Society for the Diffusion of Useful Knowledge, all contain much information at a small price. At the same time, the works of Franklin, and other instructive books of the same kind, have in a great measure replaced penny romances and those low works of fiction which are calculated only to vitiate the taste, and to interfere with the proper culture of the mind. Above all, the pure Word of God, while it has been translated into almost every known tongue, and has been sent into every quarter of the globe, has been circulated to an extent unknown before, among persons of every class in this country. It may be hoped that each succeeding year and day will witness the fruits of such extensively scattered seed. But what has been accomplished in this manner bears yet a small proportion to that which is required; because this circulation of knowledge serves not merely to supply the demand for it which already exists, but to create others in an almost geometric ratio; so that the more we do, the greater is the necessity for fresh exertions.

Class-teaching possesses one great advantage over reading—the teacher is always at hand to explain difficulties which might otherwise prove insurmountable. By this means the reading and study of the members of the class are directed into a right channel, and thus much economy of time and industry is effected. In this town, a valuable society, formed among the mechanics themselves, has existed almost ten years, under the name of the Mechanics' Institute, and one of its leading features is the class-teaching which is attached to it. Four nights in the week are their meetings held, and instruction is given in mathematics and arithmetic, languages, drawing, &c. Our curator, in his lecture on meteors, detailed to you the result of the observations made by three young mechanics who formed a part of the mathematical class. Their report was highly creditable to themselves and to the Institution with which they are connected. It looks well, indeed, when the working classes are found associating themselves together for the purpose of mental improvement, and I trust that they will receive continued and increasing support from their richer neighbours in so laudable an undertaking. Perhaps the best way in which money can be bestowed is in assisting the efforts of those who are striving hard for themselves.

The direct manner in which *public lectures* contribute to the diffusion of scientific knowledge is obvious. The facts and experiments from which the laws of science are deduced, being palpably exposed to the senses, bring with them a conviction which no reading could do; and being associated with time and place, they become strongly engraved upon the memory. For the purpose of insuring a uniform and steady supply of lectures in large towns, union is found not only to be advantageous, but necessary. Hence, societies are established, and in this town two such now exist—the Mechanics' Institute, to which I have before alluded, and the Philosophical Institution, the members of which are assembled here this evening.

The necessary appendages to such societies consist in apparatus for making experiments and demonstrating facts connected with all the branches of natural philosophy, and a museum containing specimens necessary for the illustration of the Natural History of the earth, embracing the mineral, vegetable, and animal kingdoms; a good library of scientific works, constantly receiving additions, is also required, to serve as a reference to the lecturers and to the members of the institution. To trace the progress of the Birmingham Philosophical Institution, and to examine how far it has been enabled to accomplish its objects, cannot be out of place on this occasion, when those objects form the subject of the lecture.

It was established in 1800. The gentleman to whom it owes, if not its existence, at least its early prosperity, is Mr. George Barker, who is well known to most of us. To have mainly contributed to the establishment of a society of this kind, at a time when strong prejudices existed against the diffusion of scientific knowledge, is a proof of an enlightened and vigorous mind, and great energy of character, and should entitle him to the lasting gratitude of the inhabitants of this place. In the course of time, the interests of the Institution were advocated and advanced by many, amongst whom I may, without disparagement to others, mention the names of your president, Mr. John Corrie; your treasurer, Mr. Russell; and the late Dr. De Lys and Mr. George Parsons. To the labours of Mr. Parsons, as its secretary, the society owes much; never were perseverance, industry, benevolence of heart, soundness of judgment, and intellectual cultivation, more united in one individual than in him; and it will be long, indeed, before his loss will cease to be felt by us.

The operations of the Institution were conducted on a limited scale at its commencement. A small room in an obscure part of the town, served for the assemblage of its members and the delivery of lectures. By degrees, however, it has assumed a more imposing aspect; and we now find ourselves in a comfortable little theatre, and in possession of some good apparatus for experimental Philosophy, and of a collection of geological specimens, which has already swelled beyond the limits of the only room which can be devoted to its reception.

Since its establishment, lectures have been delivered to its members by Drs. Dalton and Thompson, and Mr. Richard Phillips, on Chemistry; by Sir James E. Smith, on Botany; by Messrs. Webster and John Phillips, on Geology; by Mr. Campbell, on Poetry; by Mr. Taylor, on Music; by Mr. Scoresby, on Magnetism; by Mr. Addams, on various subjects; and by many other public lecturers. Lectures have also constantly been delivered by the Fellows of the Society, amongst which I may mention those by Mr. John Corrie, Dr. De Lys, and Mr. Baddams. Those of your president are said to have possessed the rare merit of simplicity, even when their subjects were such as are generally considered abstruse, evincing the results of a brilliant imagination and a powerful mind, and conveying both pleasure and instruction to his audience.

There are two circumstances connected with the lectures delivered before this Institution which demand especial notice. I am informed that the Society of Arts arose out of a very clever and beautiful lecture on Design, written by Mr. Richard Lawrence, a Veterinary Surgeon, and read before the members of this Institution by Dr. Bright. But this is not all. Twenty-five years ago, the spot on which I now stand was occupied by one in whom strong powers of mind and acuteness of perception were joined to great benevolence of heart. He pointed out in forcible language the forlorn and hopeless condition of those unfortunate persons who, "although endowed with the same powers, feelings, and privileges as ourselves," had been deprived of the faculty of hearing, and consequently of speech, and "were thus excluded from their natural share in human rights, and degraded in some sort from their rank as human beings." He showed how they might be rescued from this forlorn condition, so "that the same sources of knowledge, and the same books from which we receive instruction, might be open to them, whether for the exercise of their mental powers, for inculcating the precepts of morality, or for unfolding the truths and hopes of religion." The Lecturer was Dr. De Lys. Beside him stood a little girl, deaf and dumb from her birth, to whose instruction his friend, Mr. Alexander Blair, and himself, had given considerable attention. I find it recorded that " the audience at the lecture were much interested by this little child. Her appearance, indeed, was remarkably engaging. Her countenance was full of intelligence, and all her actions and attitudes in the highest degree animated and expressive; while the eagerness with which she watched the countenances of her instructors, and the delight with which she sprang forward to execute, or rather to anticipate their wishes, afforded a most affecting spectacle."

Strange would it have been had the audience not been deeply interested! For what could have been more calculated to call forth all the warmest feelings of the heart and the strongest sympathies of our nature? The matter did not rest here; the enthusiasm of the town and neighbourhood was lighted up; and there now stands an Institution for the Instruction of the Deaf and Dumb, a lasting monument of the utility of the Birmingham Philosophical Institution. I take my stand here, and contend that if no other instance of its utility could be adduced, this one alone were sufficient to entitle it to the cordial support of every well-wisher to mankind. I do not mean to say that the spectacle would have been less interesting in any other room than in this, or that the arguments would have been less sound and convincing if they had been brought forward elsewhere; but it is more than probable that the attention of these benevolent and talented gentlemen had been directed to the subject by their scientific researches connected with this Institution. At any rate, it was made the medium of communication with the public, and out of a lecture delivered to its members arose the valuable Institution to which I have alluded.

The Birmingham Philosophical Institution has also given a spur to the *promotion* of scientific knowledge. The statistical tables of mortality and of steam-power, and the meteorological journal, contained in the Report for 1836, are highly valuable documents. The latter was kept by means of the self-registering anemometer and rain-guage. This instrument, which excited so much attention at the last meeting of the British Association for the Advancement of Science, (as being something which had long been wanted, but never till then supplied), was invented by Mr. Follett Osler, in consequence of his having learnt the want of such an instrument at a meeting of the members of this Institution. It has been fixed on these premises, and you will be pleased to hear that the British Association has voted a sum of money for the erection of a similar one at Plymouth, and that the French Institute have sent for plans and drawings of it, for the purpose of testing its utility at Paris. It is indeed a beautiful instrument, combining time with meteorological observations, and causing the wind and rain to record their own operations.

Now, in reviewing the past history of this Institution, we cannot but see that much has been done for the diffusion of scientific knowledge, and something for its promotion; and to those who, after having watched over its interests and forwarded its objects during a long course of years, are now arrived at the autumn of their days, the recollection of the past must be highly gratifying. But we, who are in the spring or summer of life must not confine our view to the past: we must compare the present state of our society with the wants of the town, and examine whether it yet contains all the necessary means for the furtherance of its objects. In short, we must take up the work which our elders have so well begun, and carry out their designs more and more. In doing this, our first attention must be directed to its management; for if that be defective or conducted upon wrong principles, the actions which flow from it must partake of its taint. The Managing Committee is elected every year by the subscribers, from their own body; so that the society can refuse to re-nominate any member of the Committee in whose judgment or conduct they may no longer have confidence. I have been sufficiently long upon this committee to enable me to speak decidedly as to the intentions of its members and the spirit which pervades their councils. Actuated by no narrow or sectarian views in politics or religion, their sole aim is to carry out fully and without reserve, the great objects of the Institution—the diffusion and promotion of scientific knowledge. Had I detected the least trace of an opposite spirit, I should have immediately withdrawn myself from them, as I will never consent to be mixed up with the extremes of any party. But I know that their motives are good; and they court the fullest and most searching inquiry into their actions.

Our attention must be next turned to the state of the building, museums, apparatus, &c., &c. The building in which we are now assembled is found to be perfectly inadequate to the wants of the Institution. Many of the geological specimens, which are every day pouring in upon us, are still unpacked, as there is no room for their reception. There is no museum of zoology or comparative anatomy; there are no instruments for studying the phenomena of the heavens; and the apparatus for experimental philosophy, though very good in some departments, is in others equally defective. Library there is none; for we can hardly take any account of those few old books which are at present on the shelves of the Museum. It is evident, therefore, that the Birmingham Philosophical Institution must receive much more extended and liberal support before it can effectually attain its objects. This is not a pleasing picture, but it is a true one; and it will be contemplated with pain by the members of the British Association, who will form their estimate of the intellectual character of the inhabitants of this town by the degree of encouragement which is given to its scientific institutions. In the Lecture to which I have referred at some length, Dr. De Lys exhibited the nature and extent of one source of human misery, and at the same time demonstrated the possibility of providing an efficacious remedy. The result was, that a remedy was provided for this town and neighbourhood.

In all that has been brought forward this evening, the alarming nature and extent of the evils resulting from ignorance may be clearly traced; and the advantages arising from their removal, by the diffusion of scientific knowledge, will, I should hope, have been fully recognised. It has been shown that the Birmingham Philosophical Institution was established for the furtherance of this object; that up to the present time it has effected much, and in future it might be expected to do still more, were it liberally supported. Shall its means of utility, then, be enlarged? and shall it henceforward receive encouragement and support worthy of this great town? When I compare the feeble efforts of him who now addresses you with those which must have been exerted on the memorable occasion to which I have alluded, I will own that I despair; but when I look to the *cause* for which I plead, I entertain a hope, or rather a strong confidence, that I, also, on this occasion, shall not speak in vain. My hope is to see arise a substantial and spacious building, containing a theatre capable of accommodating an increased number of members, and apartments that shall not merely serve for the accommodation of our Curator, and for the reception of the apparatus and specimens which are at present in the Museum, but of those also which the liberality of the friends of science, or the increased funds of the Institution, may provide. It has often been remarked that the societies for the encouragement of literature and science in this town are too much scattered; and it has been suggested that an union of some of them, for the purpose of erecting a building which should contain separate accommodation for each society, would be highly desirable. Another handsome edifice might then be added to those already adorning our town, and increased facilities afforded for the furtherance of the objects which these societies have in view. I do not, however, consider myself capable of giving an opinion as to the practicability or working of such a plan.

To those who are already members of our Institution it would be quite superfluous to address a word in the shape of an appeal for greater exertions in its behalf. Of the necessity for these, at this particular time, they are well aware. There are, however, others here this evening who are not enrolled in our list of members, but who, by their presence, evince an interest in the subject. To such, and through them to the inhabitants of the town at large, I may be allowed to address a few words. To those among them who have become possessed of wealth, either by inheritance or by personal industry, I would suggest that a connection with scientific institutions is one from which they cannot but derive pleasure, and may derive improvement. It is a pleasure, as well as a duty, to employ that wealth which the bounty of Providence has bestowed in so noble a work as the diffusion of scientific knowledge; and if their attention shall be turned, by having engaged in its diffusion, to the acquirement of that knowledge for themselves, their gain will be great indeed. They will also find it to their interest. The surest protection to property will be found in the removal of ignorance and the extension of mental improvement among the labouring classes. Taught to reflect, and to trace the connection between cause and effect, they will soon learn to protect the property of others, and to create it for themselves by honest industry and thrifty management. The legislature has done much towards raising a barrier against imprudence and dishonesty, and thus stemming the tide that would soon have swept into the vortex of idleness and profligacy the property of the honest and industrious: but the completion of the cure must be effected by the improvement of the moral feelings of the working classes, and by their increased mental cultivation.

By these means our glorious constitution will be safely and soundly renovated, and its pillars and bulwarks will be so strengthened that the Gothic pile shall be supported in all the freshness of its youthful days, and shall be effectually defended against the assaults of its bitterest foes. For, as there can be no greater evil in a state, than an increasing estrangement between the different classes of society in feelings and thought, so there is no surer test of its soundness and stability than a gradual approximation between them in these respects. If successive governments have hitherto neglected to extend efficient support and encouragement to Science, there is the greater necessity for the redoubled exertions of individuals, in order that their deficiency may be counterbalanced, and that they may be shamed into the adoption of a more enlightened policy.

On the manufacturer, the Philosophical Institution has a strong claim for support. He owes every thing to Science. There is not a piece of machinery he makes use of, or a process he employs, which has not resulted from scientific investigation, whether conducted by persons devoted to abstract Philosophy, as instanced in the invention of the safety lamp, by Sir Humphrey Davy; or, (which is still more to the point,) by mechanics who have acquired for themselves some knowledge of its truths, as was done by Arkwright during the time he was perfecting his cotton-spinning machinery. If no other persons would come forward and place this Institution on a footing worthy of this large and populous town, the class of manufacturers might be expected to do so. They will receive an abundant return for all their capital embarked in the diffusion of knowledge; for it will be the means of removing the ignorance which has led to those combinations of workmen, and that destruction of machinery, which have proved so ruinous to all parties.

I appeal, however, to higher motives than these. If you value the approbation of conscience, you will not neglect so great a duty. If you are animated by love to your Maker and to your fellow-creatures, you will use your utmost exertions to diffuse widely that light which brings more clearly into view Him from whom it emanates, and which cannot fail to improve those on whom it shines. In a word, if you would live to the glory of God, and to the benefit of man, you will labour by such means as I have pointed out, by laying early the foundations of knowledge in religious instruction, and by building thereon the beautiful edifice of "Science, truly so called," to elevate, intellectually and morally, the multitudes that are around you, in this town and neighbourhood.

COURAME'; OR THE LOVE OF NATIVE COUNTRY.

Translated from the French, by a Lady.

The following simple narrative is founded upon an interesting fact, which goes far to prove how deeply patriotism is engraven in the human heart.

A young Indian girl, of the tribe of the Noragues, when about nine years old, had strayed into the forests of Guiana, where she was found by some hunters, and taken to the residence of Madame de St. Croix, the widow of a rich Cayenne planter, by whom she was nurtured. In the land of her fathers this child was called Couramé, which signifies in the Galibis language, " the beautiful." It is the custom of many savage nations to give names to their children expressive of some agreeable attribute, or of something which strikes their fancy, in the smiling scenes of outward nature, which they feel and understand so well. This custom has been handed down, amongst them, from the remotest ages. In the house of Madame de St. Croix, Couramé was baptized by the name of Demetrié, the most tender cares were lavished on her by her adoptive mother, and no pains were spared in perfecting her education. As she grew up in beauty, the gifts of nature were still further displayed by the embellishments and elegance of dress. Amongst her accomplishments she was taught music and dancing, which latter amusement is too frequently made a complicated art, rather than cultivated as a simple means of expressing, by the movements of the body, the light and joyous feelings of the heart.

Couramé wanted for nothing, she knew not a privation, but by a singular want of judgment in those with whom she associated, constant reference was made, in her presence, to the wilds where she had been found, to the miseries attendant upon the condition of savages, and to the happy fate which awaited her in the world, through the goodness of her benefactress. They thought by such conversation the more to endear her new situation to her, but it produced a contrary effect; so true is it that intuitive propensities are in some degree strengthened by contradiction. There appears to be an innate principle which determines the nature of the desires and characteristic inclinations of every living being. The bird which is produced from an egg, though hatched by a strange mother, does not the less obey its inward impulses, or the instinctive promptings with which nature has gifted it.

Notwithstanding the favours with which she was loaded, Couramé was always pensive and melancholy. The same sadness might be remarked in her, which appears to be so sensibly felt by all beings removed from the clime of their birth. She languished like the flower which droops, withers, and decays, when planted in an ungenial soil. Her inclinations resisted all those tastes which were studied to be imparted to her. She sighed for her native land. A secret inspiration told her that she was formed for a different existence; and a sort of *sauvagerie* shone out from beneath the elegant manner she had acquired by civilization. There was in her looks something vague and absent, which seemed to isolate her in the midst of those who surrounded her. Couramé anxiously questioned all who had been to the Approuague river; she had been told the country which gave her birth was to the east of Cayenne, her eyes were, therefore, ever meditatively turning towards the rising sun; indeed, in her daily walks, she could not gaze on the calm sea without feeling a longing desire to return to the place of her infancy.

Couramé felt no delight in associating with girls of her own age; for the children who shared in her recreations were not of her tribe. She wept because she had neither brother or sister. She regretted the pastimes of her country. In the midst of abundance and riches, every thing was wanting, for her mother was not there.

She was nine years old when taken from the forest of Guiana, and at that age whatever is impressed on the mind is not readily obliterated. She was always pensive and abstracted. During the night she would often give way to sobs and tears, and when at length sleep came to her relief, the voice of her mother would disturb her dreams. Notwithstanding all the grief she endured she was still beautiful, though languor was visible in every feature of her countenance, and that touching melancholy which, as an ancient writer has said, is in some degree an ornament of grief. With Madame de St. Croix, Couramé was constantly the object of solicitude. She had all the advantages of instruction, from the best masters, which money could procure. Couramé listened to her preceptors with attention; they spoke of her progress in accomplishments as a prodigy. She was taught the French language; but by her there was one language which was preferred to every other, that was the Galibis—so poor in superfluous words, but so rich in affectionate and tender expressions. Every word of this savage dialect, which had never been used to disguise the thoughts, and which her mother had taught her from infancy, was cherished.

It is remarkable that Couramé's education, far from extinguishing in her the love of her country, had only strengthened this affection, by developing all the energies of her mind. At this particular time there was a project on foot for civilizing the savages of Guiana, and the French government was made acquainted with it. Now Couramé read with extreme avidity every thing which was published relative to the wandering nation of the Galibis, the industry of the Noragues, their habits, pastimes and other characteristics. Her imagination was stimulated by numberless recitals tending to foster her darling wish, which was to end her days amidst the scenes that had cradled her. "Cherished country! country where I first saw the day!" cried she, "who can restore me thy charms, or what can excite the happiness thou bestowest on me? Who can think of thee without regretting thee, without longing to behold thee again?" Madame de St. Croix had long perceived that Couramé was not happy, she courted solitude, and though in the midst of so many who loved her, she seemed like a creature of another species. None knew whence to attribute this melancholy; on her own part Couramé dared not tell the cause of her grief. She feared to be thought ungrateful, and to afflict her benefactress. Madame de St. Croix imagined sometimes that an irresistible sentiment of love perhaps had taken possession of her heart, for she was then fifteen years old; and when the mind is occupied by one thought, that thought monopolizes every other. Besides, she saw that the praises lavished on her beauty fell insensibly on her ear. She endeavoured to console her by affectionate endearments. Vain attempt! of what value are the caresses of an adoptive mother, when we embrace, in imagination, her who has born us in her bosom, who has nourished us from her body!

The only thing which lessened Couramé's regrets was reading some historical works which Madame de St. Croix had kindly given her; for her benefactress was possessed of a highly cultivated taste, and looked upon books as friendly consolers which prevented the mind from dwelling too intently upon sad impressions. Couramé profited by this resource, as well as by the conversation of Dr. Valayer, a worthy old man, who for more than forty years had been the idol of the colony. He was as amiable as enlightened; was the physician of the soul, as well as of the body. He had penetrated the secret thoughts of Couramé; but he carefully concealed from her his knowledge. He had ever a gentle and delicate manner in his conversations with his patients which quickly won upon their confidence.

Ere long a particular event brought a happy change in Couramé's existence. M. Le Baron de Besner, a most enlightened philanthropist, was at that time governor of Cayenne. He carried the most active mind in a weak, imbecile body. He was always influenced by the most anxious desire of being useful to mankind, and his ardour was indefatigable; above all he loved the Indians, and wished to ameliorate their condition by civilizing them. The better to further his designs, the Baron endeavoured to draw some Indians of Guiana by various pretexts to Cayenne. He wished to induce them to appreciate all the advantages enjoyed in towns; and for this purpose it was necessary to allure them thither. His aim was to make these savages approach the civilized inhabitants, to make friends of the colonists, and to turn them insensibly to those habits which could ennoble them in their own eyes. He flattered himself that he could influence particularly the manners of the Noragues; who of all the savages are those who shew the most morality; who respect their parents; who have the most justice and good faith. In a journey which he had made to the territory of the Approuague, he had gone amongst them, and he was persuaded that he might do much with this interesting tribe. He hoped to make them labourers under whose hands the fertile country they inhabited, would prosper. He could communicate with them so much the better as the greater part were baptized and had already received some of the benefits of civilization. M. De Besner informed their chief, Almiki, that it would perhaps interest him to come some day into the metropolis, with some of his followers, to deliberate upon affairs which concerned him, and which related to the prosperity of the tribe. The message was adroitly delivered by an ambassador, who acquired great ascendancy over him.

It is well known how unwillingly the savages carry on communication with strangers, unless constrained by force or by the pressure of their wants. But the Noragues had been for some time very poor: they wanted axes, sabres, muskets, and other implements. They imagined, with reason, that their journey would be profitable to them in this point of view, and they accepted without hesitation the governor's proposal. The aged Almiki, too old to quit his hut, consented to the departure of his son, who was accompanied by several men and women of the tribe. The news was spread in Cayenne that the Noragues were coming: Couramé's joy was not to be described. She imagined that she might now return and see her mother, and the love of country was renewed in all its force. In her impatience she counted the days and hours which then intervened before the expected arrival of her countrymen. The present time is ever a weight to a mind which only feeds on hope. Couramé ran over, in her memory, all the words of the language she so well knew before her capture. She felt sure of being recognized by her friends, for though she lived in the splendour of riches, and though her clothes were very costly, she always preserved something of the Indian costume, and wore the long smooth tresses of the Galibis women. Her ears were adorned with coral, her neck was enriched by a chain of red seeds, and her bracelets were composed of little sea shells. Madame de St. Croix, who was proud of the elegance of her adopted daughter, liked to perceive in her attire these distinctive characteristics of her nation.

The arrival of the Indians was hailed with universal joy. They marched in file, one following another, after the manner in which they were obliged to traverse their own woods. The whole population of the colony ran out to see them pass. The savage is always an object of curiosity to the civilized man. The young Couramé could not contain her transport on beholding the people of her tribe. In the language of the Galibis, she entreated them to give her news of her mother, she spared no signs or gestures to make herself understood, and sought the answers in their looks. Her imagination beheld in them her parents, her home, all the territory of the Approuague.

Amongst the Indians who came with this deputation to the governor there were several of good stature and noble appearance. The son of Almiki was distinguished above them all by his costume, which was more gracefully arranged than that of his companions. He was armed like a warrior and had a commanding air, though his countenance was thoughtful and melancholy. His features, however, became less austere when he perceived Couramé. But the latter directed her attention to a group of Norague women, who walked behind, carrying fermented liquors and some flour of manioc, to make a sort of thickened soup for their husbands. The Indian women were clothed more modestly than they were wont to be, and most of them were adorned with feathers: they wore petticoats of blue worsted or calico, which is the favourite colour of the Noragues. Some of them had heightened their complexion by paint. They walked in buskins or shoes ingeniously woven with rushes and cotton threads. Notwithstanding this rather whimsical costume, Couramé was enchanted to see them, and thought that their ornaments were preferable to those with which she was adorned. She envied their lot, and longed to be with them. As to the Indians, they were delighted with Couramé, whom they had recognized, and stood gazing upon her with the greatest astonishment. It was an interesting sight to see those inhabitants of the forest mingle with the people in the town.

They were brought to the governor, and eagerly asked for muskets, bill-hooks, axes, and other tools or instruments, of which they had great want. The Noragne women displayed their rush baskets and their earthen vases, which they gave to the ladies, receiving in exchange jet necklaces, bracelets, and other articles of ornament. During this time, Couramé mixed with them: she sought for her mother, who, not suspecting that her daughter still existed, had not quitted the huts. The governor received the Indians with the most free cordiality; for, as before stated, his ardent wish was to make them enjoy the sweets of civilization. But no sooner were they arrived than they began to talk of returning home. In order to detain them, the governor endeavoured to interest their curiosity, but nothing could captivate them. The admiration of savages is flighty and evanescent: Amongst them, the passion of self-preservation is the only permanent one. Thus they observed nothing extraordinary in the paintings and master-pieces of art which were shewn them: they always thought the scenes of Nature preferable, and longed to return to them. Every thing that did not relate to their especial wants made no impression upon them. The mirrors which they found in the saloon of the governor did not astonish them, because they had often seen themselves reflected in the Approuague river. No surprise was expressed when pictures were placed before them, for they only fancied they saw the image of an object in the water. At first they were delighted by the wind instruments which composed the band of the regiment, so superior to their own flutes of bamboo, from which only the most monotonous sounds could be drawn. The Indians like tumultuous and loud noises, which do not express anything fixed or determined.

M. Le Baron de Besner neglected nothing which could prevent the deputation experiencing ennui or constraint. To amuse them, he gave a grand feast; and what astonished them most was to see the number of dishes which appeared successively. They could not imagine the use of so many of the superfluities which were already introduced in the houses of the rich Europeans. After the repast, various games were introduced for their entertainment, when Couramé appeared before them and executed a Noragne dance in an enchanting manner, embellished by all the improvements of art. The Indiar surrounded her and seemed to follow every step by observing th cadence with a remarkable precision, and they were in extacy with the inimitable grace of her movements. Couramé joined to the polish that education had given her, that native grace and elegance which she inherited from the country that gave her birth.

The Indians afterwards acted several pantomimes, a species of amusement much in use amongst the Galibis. At the conclusion of the fete, the Indians sang after the manner of their country, which much gratified the curiosity of the colonists. The music of the Noragues is sad and melancholy, like that of all the Galibis; but its notes are very expressive when they paint the anguish of grief and distress. A young Indian girl sang, in a soft mournful strain, a hymn, which expressed the regrets of a mother whose child had been overwhelmed by the rising of the tide, at the mouth of the Approuague, a calamity of not uncommon occurrence. But Couramé could not hear such regrets without shedding a torrent of tears. She imagined that her own mother wept for her, and this idea plunged her into a sadness which prevented her from taking any part in what was passing around her. However the youth, the grace, the attractions of Couramé had made a great impression on the Indians; for who could see her without admiring her? She was beautiful as a Grecian statue.

The joy of the Indians was excessive when they thus accidentally found one of their tribe, who had been separated from them by civilization, and they wished to restore her to their country. Couramé talked to them incessantly in the sweet and persuasive Galibis language, which is comprehensive enough to express the most important things in common life. She gave them to understand, by every means in her power, the ardent desire she had to return to the place of her birth. The feelings of savages are very strong and ardent, however exercised, whether in love or revenge. Scarcely had they seen their young countrywoman ere they entertained a great affection for her. And, meditating flight from Cayenne, she mingled with the Norague women, who surrounded her, and seemed as if they wished to carry her away with them. They understood each other in a moment; signs and looks expressed what words could not, and Couramé listened to all their communications with growing agitation. She was more than ever determined upon the project of quitting the town, and returning to her tribe; and drawing the Indians aside, questioned them closely on its practicability.

Meanwhile the night advanced, the Baron had provided sleeping accommodation in the great hall of the old mansion of the Jesuits, in order that the Indians might repose themselves. During which time

Couramé was watching and secretly preparing for her flight. One thing only made her unhappy, this was the grief that her departure might occasion Madame de St. Croix. The poor girl wavered between two conflicting feelings, for nature has not given us unalloyed pleasure in this life—nothing is more painful to the mind than these opposing inclinations, these inward combats, striving for mastery, when the heart is divided by two powerful interests distressing perplexity is necessarily the result. The moon shone in unclouded splendour, and Couramé profited by the light to contemplate from her window the tranquil ocean. With what joy did her eyes wander over this azure plain, which was soon to be ploughed by the swift Indian canoe. Cayenne is not very far from the territory of Approuague, but it seemed as if she had infinite regions to traverse before she could arrive at the end of her wishes. To an impatient heart it is not space, but longing that constitutes distance. At length the dawn appeared, and Couramé summoned up all her courage to quit the house of her benefactress. But how many mournful feelings arose in her heart! It is possible to return in transport to one's native land, and yet to shed some tears over the hospitable threshold which has heretofore sheltered us. Couramé sobbed convulsively when abandoning the house where she had been so generously received, so warmly beloved. She wrote a letter to her benefactress in which feelings of deep sorrow and glowing gratitude were mingled, and she deposited on the table all the gifts which she had received from the hands of Madame de St. Croix, and left in a box all the jewels which adorned her dress.

Clothed in a simple Indian robe, her long smooth hair was her only ornament. The town was yet wrapped in repose, when she ran with precipitation towards the shore, where the Noragues waited for her. She met few people at this early hour, and the simplicity of her dress prevented her being known. She leapt into the canoe, the hymn of departure was sung, and they rowed in cadence towards the land of Approuague. The Indians took their leave loaded with presents from the governor, the winds were favourable, the voyage speedily at an end, and the canoe which conveyed Couramé arrived safely at its destination.

But no words can express the grief of Madame St. Croix when she heard of the flight of this beloved daughter, whom she had loaded with favours and cherished so tenderly. At first she refused to believe that so lamentable a misfortune could have occurred, but her doubts were soon removed when she entered Couramé's room and saw the letter which this poor girl had written to her. Madame de St. Croix was inconsolable, nevertheless she did not think of using any means to reclaim her from the Indians, as she held Couramé to have exercised no more than a duty in returning to her real mother.

Five years passed without any tidings of the fugitive; she was perhaps happily settled in her mother's hut, and this idea lessened the regret of Madame de St. Croix.

Couramé was indeed almost forgotten at Cayenne, and her name rarely mentioned in conversation. By the most singular chance, it happened that the good Dr. Valayer was led to the banks of the Approuague. He had an estate in this fertile spot, and went to visit it. He entertained the idea of establishing botanical gardens there, as he was passionately fond of this branch of natural history, and was considered one of the best pupils of Bernard de Jussieu.

It is impossible to depict his surprise, when, on visiting the Norague Indians, the first person who presented herself was Couramé, whom he immediately recognized. He entered into her hut, where he found her surrounded by all her family. Her husband was the son of Almiki, the chief of the tribe, the same who had been one of the deputation to the governor of Cayenne, when Couramé bore the name of Demetrié. It was the same youth whose noble air had been so much admired at the fête given by M. Le Baron to the Indians; and it was well that the flower of the Norague women should be united to the bravest of the men. Couramé still lived with her aged mother, whom she assisted and consoled. Some earthen vessels, some instruments for hunting and fishing, and the rude sleeping couch composed the furniture of the dwelling in which she preferred to pass her days.

Dr. Valayer beheld with astonishment, the changes which had taken place in the deportment of Couramé. She was no longer the young girl devoured by ennui and melancholy, in the midst of luxury and refinement. She was now a woman whose delight consisted in her maternal cares, and who passed her days in domestic peace. But she was still beautiful, and had not lost her taste for ornament. She wore a necklace made of tiger's teeth; her tresses were adorned with precious stones, brought from the sands of the Ruby river; her bracelets were of an Indian grain, which sometimes resembles jet. It may be truly said that a well arranged hut, is the abode of the partriarchal virtues.

Dr. Valayer declared he never saw a more touching picture. He blessed the day on which his own affairs and his love of Botany had led him to these scenes. He put a multitude of questions to her upon her new situation, and her answers showed that she was more than satisfied at having been restored to her primitive condition. He asked her, what had become of all those talents which had been cultivated with so much care during her residence at Cayenne? He wished to know, above all, what had become of a very valuable library which Madame de St. Croix had given her to perfect her education? "Behold my books!" replied she, pointing to her children and the new-born infant at her breast. "I am a wife and a mother. All my learning has gone to make room for my affections. Of all that you have taught me, I only preserve the fear of God, which has sustained me in all my afflictions. I owe to him the prosperity of my family and the continuance of the happiness which he has bestowed upon me on earth.

Couramé and the Doctor then entered into a conversation, in which they balanced the inconveniences of a social life against those of a savage one. "Talk not to me of your science," said she, "it only creates doubts. What makes the Norague happy? his bow and his freedom. My children know and love God; but they do not seek to penetrate the secrets of Providence. Their reason is never harrassed; they enjoy happiness here below without enquiring whence it comes. We have prudence, the preserving genius of rational, sensible beings, to guide us through life. That independence which you seek for with so much ardour, we possess; for, in the midst of our woods and in the bosom of beneficent and hospitable Nature, there is neither tyranny nor servitude. We do not value your sentiment of fame, because we do not know it."

During this conversation, the brave Almiki, her husband, who was smoking odoriferous herbs, seemed enchanted with the good sense and wisdom of his wife. Valayer, on his part, admired the choice of Couramé's expressions, which singularly contrasted with her wild condition. He approved her resolutions and was moved by her sentiments, in which he so far acquiesced as to eventually sell those possessions which he had in Cayenne, and return to end his days in the land of his birth.

THOUGHTS ON EDUCATION.

Every genuine lover of science must deeply regret that the differences existing among men, with regard to political government, and religious discipline, should so frequently interrupt and destroy that general harmony which ought to exist in a civilized community. This contrariety of sentiment too often, by circumscribing the bounds of social intercourse, checks the extension of intellectual improvement and the dissemination of the most valuable knowledge. Thus it is, that party spirit, like a chilling blight, withers the promising bud of science and engenders a canker worm in the fairest blossom of the tree of knowledge. All classes of society, even the most talented individuals of the land, seem occasionally to be subject to the domination of this false and misguiding prejudice. All such discrepancies would be reconciled if human wisdom could attain perfection and become universal. But however powerfully this desirable consummation may have been exhibited in theory, it is utterly impossible to be practically exemplified so long as the passions and infirmities which now sway the human mind remain in full action. And what power of man can exterminate evil from the world; or what golden dream of purity and bliss will not the waking stern reality of misery and degradation dispel?

The thraldom of the dark ages is now passed away; the light of knowledge has dawned upon the world, and continues to shine with increasing splendour; the stream of wisdom has spread far and wide through distant lands, and enriched with its jewelled sand the remotest shores. The amelioration of the moral and physical condition of men, with the consequent improvement of their social and intellectual capabilities has been the result. All great and extensive changes in the mental economy of man, are universally acknowledged to be best effected by slow and gradual means. There is no golden way to wisdom—no enchanter's wand by which the rude and primitive barbarian of some insulated spot could be at once changed into the civilized member of polished society. The light of knowledge makes a much surer progress when it shines with a steady and unchanging lustre, gently pervading the cheerless gloom and dispersing almost imperceptibly the clouds of error, than when it is forced into a vivid but fitful blaze which, for a time perhaps, may shed around the brightest flashes, serving to shew more palpably the darkness of ignorance, but too evanescent to dispel its shades.

In those countries where civilisation has made most rapid strides, where the immense advantages of science are duly appreciated, and where all the various arts are cultivated for the common weal, great differences of opinion exist as to the kind and extent of general education. The good cause which every genuine philanthropist must have at heart—viz., the amelioration of the condition of his fellow creatures, is by these conflicting views materially injured, and the progress of improvement in the needy part of the community mainly retarded. A constant series of speculative controversies, vehement denunciations, and individual systems is created amongst those whose office and duty it is to direct in the path of wisdom those less informed than themselves; and, by a strange perversity and spirit of opposition, these teachers themselves too frequently, on the one hand, become prejudiced bigots for old customs, or, on the other, visionary enthusiasts for new chimeras. Without entering deeply into the respective merits of these questions, it may be well to remark that the nature and quality of the knowledge bestowed ought to be adapted to the extent of mental development exhibited in different states of society, whether those states be but one step removed from the waste of barbarism, or far advanced in the cultivated fields of civilisation. The food, to be nutritious, should be capable of being easily digested. It is a familiar aphorism, but not the less true, that we should give milk to babes. It is the quality, not the quantity, of the knowledge imparted that is liable to objection. The soil should be prepared by degrees for the perfecting of the choicest produce. The whole economy of Nature seems to be in accordance with this progressive system. The tiny spring issuing from the mountain's side gathers strength and volume from every tributary rill received in its course, until it swells into the majestic stream which flows through the plain, enriching the bordering lands with its fertilizing flood. The newly-formed bud, inclosed in its protecting folds, gradually bursts into light and is matured into the perfect fruit by those rays which would, in its earlier state, have withered and destroyed its tender fibres. A sterile tract, recently exposed to the vivifying influence of the sun and atmosphere, at first yields only Thistles or Lichens: these in turn decay and qualify the soil for the reception of choicer produce, till at length the luxuriant blade, the glowing flower, the blooming shrub, the majestic forest tree, and the golden harvest successively adorn the once barren waste. Now, during all these progressive changes, each succeeding development is fed and freshened by the genial dew of Heaven; and this may not inaptly represent those moral and religious precepts which ought ever to accompany and direct the advance of knowledge.

Many self-constituted philosophers, who have obtained most of their wisdom from books, rather than from an extensive acquaintance with the world or familiarity with the practical details of human nature, and whose sphere of observation is limited to the various hypotheses of metaphysical reasoning and the wild speculations of theoretical conjecture, too frequently prefer espousing new theories and promulgating new systems, rather than endeavouring to apply acknowledged facts, or more widely diffusing perhaps old-fashioned principles.

The happiness of a people does not altogether depend upon their commercial prosperity, or on the extent of their intellectual acquirements as regards acquaintance with the various arts and sciences, but rather on their moral condition. The wisest and best of mankind have, throughout all past ages, universally expressed their entire conviction that a higher motive to moral action is required than that presented by the mere temporal advantages arising to society from such a condition: for the advantages must vary with the changing state of such society: and if once expediency is admitted as the rule of conduct, the standard of right is instantly depreciated and opinion usurps the place of immutable truth. It is, then, only by the aid of the more exalted sentiment of religion that moral precepts can be enforced and maintained. The faculty of veneration disposes man to adore the Creator of the Universe: *first*, as seen in the book of Nature, and *secondly*, as displayed in the volume of Revelation. This faculty is doubtless an innate power of the human mind, implanted there for the wisest purposes; but this, perhaps more than any other of the mental powers, requires direction in its development, in order that its legitimate effects may be produced. When it is in accordance with, and in obedience to, the declared will of the Creator, it cannot be too active. Thus manifested, it controls all the fiercer passions, and bridles every licentious desire; at the same time, it curbs that feeling of false independence and assumed wisdom which is engendered by pride and fostered by self-confidence, and which proves so frequently a stumbling block to improvement and happiness. But the purifying influence of religion does not arise, as in simple moral government, from the probable evil that may accrue to society from the free indulgence of bad propensities; its influence proceeds from an unwillingness on the part of the individual to displease the Being whom he acknowledges alike to fear and to adore. The highest possible motive to action is thus furnished, and an unerring standard of right and wrong is for ever established. The abuses of the faculty of veneration are manifold, as exemplified in the extravagant mythology of the pagan world, the cruel superstitions of the barbarous ages, and the wild fanaticism of more modern days.

Infidel sophistry would endeavour to obscure and divert the genuine light of truth by refracting it through the medium of human passions and human prejudices, and would persuade men to submit every thing to the test of their own reasoning powers. Thus it would reduce within the limits of a mathematical triangle, the laws and economy which govern the universe; whereas there is much that reason cannot fathom which Revelation declares to be true, and it is only by a calm, careful and unbiassed examination of the declarations contained in the Sacred Writings that the benevolence and wisdom of the Creator's ways can be understood, and their ameliorating influence acknowledged.

It is generally admitted that misery is often the concomitant of ignorance; but it does not follow, as a positive induction, that happiness would be attained by the possession of mere scientific knowledge. If such was the case, superior intellect would ensure a greater share of happiness, while a less fortunate mental endowment would necessarily always experience corresponding misery. Now, this is not practically the fact. The most talented are not always the most free from vice and sorrow. Nor are the less informed always strangers to visions of bliss. It is only by virtue founded on religion, individually practised and generally disseminated, that permanent happiness can be promoted.

Have the writings of Rousseau and Voltaire increased the welfare of mankind? Rather, by encouraging doubts and scepticism, under the fair cloak of morality, have they not loosened the bonds of society, and been direct agents in producing crimes the very calendar of which is fearful to look upon? Have they not, by withdrawing the restraining influence of religion, set at liberty the will of man to revel in all its wild imaginings, and to own no government save that arbitrary and yet vacillating power, the boasted sovereignty of reason? Are the discoveries of a Newton, a Davy, and innumerable other benefactors of their race, less important to the community because they blended religious sentiments and feelings with their philosophic pursuits? It is often argued in these days of ostentatious liberality, that religion has nothing to do with education; that it fetters the judgment, and is a clog to the free extension of knowledge. False, delusive reasoning! As well might it be said that when the vessel spreads her broad canvass to catch the passing wind, and pursues her way across the tumultuous ocean, that the directing hand of the pilot, as he guides her through the various dangers that encompass her track, unduly fetters and restrains her free course. Let him but once quit the helm and suffer the ship to obey the wild blind impulses of the elements, and she will quickly be swamped by the rushing waves, or stranded on some hidden rock. It is just so with education. Let instruction,—that is, instruction in the spirit and word of the Christian obligation—be once excluded from the preceptor's paramount duty, and the young mind, as its various powers are disclosed, will be borne along through the sea of life a prey to wild passion and conflicting opinions, and will ultimately make shipwreck of all its brightest hopes. For, as the compass possesses no inherent power in itself to guide the bark, or bring it to the wished for haven, but is merely the instrument in the hand of the pilot; so reason, undirected by religion, is inadequate to ensure present happiness or secure from future misery. At the same time, it should be distinctly understood, that all bigotry is diametrically opposed to improvement; for, where the excellence is presupposed to be superlative, there can be no desire for farther enquiry and no acknowledgment of the possibility of erring. But the religion that inculcates charity and humility as its vital doctrines, must necessarily be at variance with all narrow-minded pride and self-sufficiency.

Some persons possessing weak reflective faculties and confined prejudiced notions, who are incapable of taking comprehensive views of a subject, or of foreseeing remote consequences from present causes, frequently express alarm at the rapid progress of improvement, and inveigh but in vain against the increasing wisdom of the age. The stream of knowledge cannot be arrested, and no sound thinker, no general well-wisher to mankind would desire to stay its course. But it is the duty of all to endeavour to direct its currents in those channels which will at once tend to enrich and adorn the intellectual domain. The human mind will inquire, it will endeavour to progress. It must have food to satisfy its increasing appetite.

The wonders daily brought to light by the researches of science, and the speculations induced by the discoveries made relative to the different capabilities of matter, present a constant and ever-varying banquet; but the viands must not be seized indiscriminately, and the greatest care should be enjoined in adapting each to the peculiar condition of the receiver. Where the intellect is highly cultivated, all may be taken—every flower in the garden of knowledge may be plucked. The solid earth, the yielding waters, the ambient air, the numerous varieties of organic life, the phenomena of the subtile elements, and the stupendous fabric of the celestial system, may all be searched into, and the symmetry of their structure displayed. Even the mystery of life and immortality and of the creative energy may be investigated, so long as there is a fixed principle to control the feeling of overweening pride, and to teach man that his powers are finite and his wisdom but foolishness. This principle is pure Revealed *Religion*.

E. M.

TWO CHAPTERS, ILLUSTRATIVE OF THE CHARACTER AND CONDUCT OF JAMES I.

"It is scarce hyperbolical to say, that this prince has been the original cause of a series of misfortunes to this nation, as deplorable as a lasting infection in our air, our water, or our earth would have been."—BOLINGBROKE'S *Dissertation upon Parties.*

"Maximus in folio, minimus in solio."

"The reading of histories may dispose a man to satire; but the science of history studied in the light of philosophy, as the great drama of an ever unfolding Providence, has a very different effect."—COLERIDGE, *On the Church and State.*

CHAPTER THE SECOND.

If James had rendered himself contemptible at home by degrading the character of royalty abroad, he had become still more so, by not displaying the lofty spirit of a king of England on occasions where he ought to have manifested it—by his sneaking, shabby, huckstering, penny wise and pound foolish policy—when, according to every rule of reason and justice, he should have acted up to the dictates of a large and sound policy. In 1604, by a peace with Philip II., he concluded that war with Spain which Elizabeth's great determination of character had enabled her to prosecute in the most vigorous manner. Now if a diplomatist of the present day were to ask whether this self-sufficient adept of Kingcraft had obtained a *quid pro quo?* the fair and impartial answer would be, he had suffered himself to be so completely over-reached that England had not gained a single advantage, while the Netherlands were piteously consigned to their fate.

Again, upon the negociation which the Netherlands entered into with Spain, respecting the recognition of their independence in the year 1607, it might have been anticipated he would assume an attitude of greatness corresponding to the bravery of the people over whom he reigned. When Elizabeth would have spoken that generous and warlike language which would have succeeded doubtless in attaching the new state to her, by the surest of all ties—confidence in her power as well as in her integrity and ability—nothing of this fell from the lips of James. The people of the Netherlands were odious and wicked in his eyes as a set of rebels; and from his outrageously insulting their feelings at one time by avowing them to be such, and at another by conducting himself in the most contradictory manner—blowing hot and cold with the quickest change, during the midst of the negociation—the result of his fluctuating, irresolute, timid policy was that Henry acquired that paramount influence which Elizabeth would have grasped and maintained.

Now we love peace and we hate war; especially a war of pride, ambition, passion, aggrandisement, and tyranny. We should then have applauded the pacific dispositions of James if he had pursued peace as the means of alleviating the burdens of his people, as opening to them fresh channels of commercial intercourse and commercial enterprize, as promoting arts, sciences, and civilization. But history has recorded on her most durable tablet that this possessor of the English throne would have purchased peace always at the price of ignominy: however inconsistent it might be with public interest or national honour, he would have sought it as a prize justifying the basest arts and compliances, provided it could only have insured him the indulgence of his habitual apathy and indolence. What was his declared motto, "*Beati pacifici,*" but a confession or proclamation in *him* that he was of a nature impassible to those insults and offences which would have unsheathed the sword of every other crowned head in Europe?

His relations, then, with the principal continental powers might have soon ceased if family circumstances had not again served to renew them. By a most unaccountable perversity of judgment, he was desirous to have a Spanish alliance cemented with Spanish blood; in other words, a Spanish princess was to be the wife of his son and successor—a Roman Catholic, therefore, a descendant of a family and nation inveterately and incurably opposed to the religious and political interests of England—seeking this union too in utter disregard of that sagacious determination expressed in his own *Basilicon*, of sedulously avoiding a popish match for his son. And while concession after concession was made to bring about this marriage with one who invoked saints and heard mass, they produced no other result than that of Spain duping and deceiving our Solomon for seven long years.

The marriage of his daughter Elizabeth had created new continental relations, and, with them, events as disastrous as they were shameful to James—events which might have been effectually averted if, here again, he had not behaved like himself; that is to say, with indolence, irritability, fickleness, and incapacity. Nevertheless, upon his foreign policy in this respect, Burnett is accused by Higgons for displaying his overflowing rancour against this unworthy successor of Elizabeth, because he said "It was expected that so near a conjunction might have prevailed on the king; but he had an invincible aversion to war, and was so possessed of the opinion of a divine right in all kings, that he could not bear that even an elective and diminutive king should be called in question by his subjects; so he would never acknowledge his son-in-law king, nor give him any assistance for the support of his new dignity.*"

During the visit which that unfortunate prince, Frederic V, Count Palatine of the Rhine, and afterwards for a short time King of Bohemia, paid to England, for the purpose of seeking in marriage Elizabeth, the lovely† daughter of James, his manners were so popular and gracious, and his character so amiable, that he gained the esteem and respect of the English Court and of the country at large.‡ How strongly the national mind ran in favour of the unfortunate Palatine after his dethronement and the loss of the electorate, is shown in the following remarkable fact:—On its being reported to the Commons that one Floyd, a Roman Catholic, had expressed to his wife the pleasure he felt at hearing of the fallen fortunes of the Palatine, the House became so infuriated as actually to condemn him to be pilloried, whipped, fined, and imprisoned for life. The Lords, however, conceiving that it would be a surrender of their constitutional rights to allow the lower House the power of adjudicating and committing, so effectually interfered as to succeed in checking this encroachment upon their privileges,* although, to their unspeakable disgrace be it added, they partly acquiesced in the violent and arbitrary resolutions of the Commons. As a still more striking instance to what a depth and intensity of feeling the cause of the Palatine had possessed the judgment and conscience of the Commons, just before their adjournment by the king, says an eye-witness of the enthusiastic scene, "with the voices of them all, withal lifting up their hats in their hands so high as they could hold them, as a visible testimony of their unanimous consent, in such sort that the like had scarce ever been seen in parliament," they in this manner resolved to support the Palatinate with their lives and fortunes.†

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* *History of his own Time*, vol. i, p. 22.

† Her personal attractions are well delineated by Miss Aikin.—See *Memoirs of the Court of King James I*, vol. i, p. 427.

‡ See Winwood, vol. iii, p. 403.

Another anecdote manifests the warm sympathy that was felt in behalf of the ill-starred and much admired Elizabeth:—"The lieutenant of the Middle Temple played a game this Christmas time, whereat his majestie was highly displeased. He made choice of some thirty of the civillest and best fashioned gentlemen of the House to sup with him; and, being at supper, took a cup of wine in one hand and held his sword drawn in the other, and so began a health to the distressed Lady Elizabeth, and, having drunk, kissed his sword, and laying his hand upon it, took an oath to live and die in her service; then delivered the cup and sword to the next, and so the health and ceremonie went round."‡ Seldom has royal misery been depicted in more vivid and affecting details than in the following letter of the Ex-Queen to her father:—

Sire,—I do not wish to importune your majesty with a very long letter. The Baron De Dona will not fail to inform your majesty of the misfortune that has befallen us, and which has compelled us to leave Prague, and to come to this place, where God knows how long we shall be able to remain. I therefore most humbly entreat your majesty to protect the king and myself, by sending us succour; otherwise, we shall be brought to utter ruin. It is your majesty alone, next to Almighty God, from whom we expect assistance. I most humbly thank your majesty for the favourable declaration you have been pleased to make respecting the preservation of the Palatinate. I most humbly entreat you to do the same for us here, and to send us sufficient succour to defend ourselves against our enemies; otherwise, I do not know what will become of us. I therefore again entreat your majesty to have compassion on us, and not to abandon the king at this hour, when he is in such great need. As to myself, I am resolved not to leave him, for if he should perish, I will perish also with him; but whatever may happen, never, never, shall I be other than,

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* *Parliamentary History*, vol. v, p. 418—429.

† See Hallam, *Const. Hist.*, vol. i, p. 302.

‡ See Ellis's *Letters on English History*, vol. iii, p. 118, 119.

Sire,
Your majestys most humble and most
obedient daughter and servant,
ELIZABETH*

Breslaw,
$\frac{23}{13}$ *November,*
To the King.

But this touching appeal to parental affection which might reasonably have been expected to excite a burning impatience on the part of James to redress his daughter's wrongs, produced in him no other feeling than that of extreme dissatisfaction. Now, though no person could have looked for one so destitute of personal courage as this monarch was to play the part of Gustavus Vasa—to stand forth as the defender of the Protestant religion in Germany, or for his pacific policy to dare to make his nogociations and hostilities proceed together; it was not extravagant to think, that his king-craft might at last have saved his ministers from being baffled in their several missions, and contemned by foreign powers. That wise and spirited diplomatist, Sir Henry Wotton, after having in vain pressed James to pursue more energetic measures in support of the elector, not choosing to be converted into an instrument for degrading the national honour, desired to be recalled from his embassy to the court of Vienna.† Who then can be surprised that the disappointed elector should thus give vent to his indignation at the poltroonery of his father-in-law: "If his Majestie would have bestowed the money which he hath spent in treaties, and upon the Navy to Algiers in behalf of the Spaniards, upon his daughter and children, their inheritance had been preserved, and need not to have sued to their enemies; whereat his majestie was offended not a little." *

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* *Ibidem*, vol. iii, p. 112, 113.

† See *Reliquiæ Wottonianæ*, p. 24. "His sending ambassadors" emphatically observes Weldon, "were no less chargeable than dishonourable, and unprofitable to him and his whole kingdome; for he was ever abused in all negotiations, yet he had rather spend 100,000*li.* on embassies to keep and preserve peace with dishonour, than 10,000*li.* on an army that would have fixed peace with honour."—*Character of King James*, p. 8.

After this statement, we think there is no occasion to waste any more words in proving, that the first part of Burnett's paragraph is supported by the best authorities of the day. While in respect to the latter, nothing can be more demonstrative of the malignant spirit with which the whole of Higgons' book is written, than what we shall now quote. The following sentences may be regarded as specimens indeed of that compound of audacity and falsehood hardly to be matched even in those writers who are most notorious for their partiality and unfaithfulness:—"In the first place; we must consider that the behaviour of Fredric towards his father-in-law was so disrespectful, in not asking his advice in a matter of so great consequence, nay not so much as acquainting him with his resolutions to accept the crown of Bohemia, as might make King James, and not without reason, the cooler in his concerns. Yet notwithstanding the justice of any resentment which he might have on this occasion, we find that this prince, left no stone unturned to serve the Palsgrave, by mediations, treaties, and advantageous proposals, made to the house of Austria, in order to restore him to his patrimony, though he could not in honour support his pretensions to the crown of Bohemia, the possession of which had been founded on a revolt of the Bohemians from their lawful prince the emperor, but without any considerations of the divine right of kings, as our author pretends, he had better reason to justify his conduct; his experience had shewn him how fatal this politic in queen Elizabeth had been to his own mother."†

Precisely and distinctly we shall endeavour to prove, that the very reverse of all this is the true state of the facts. In the Harleian Manuscript, 1583,‡ there is preserved the original of the Baron Donas' letter to Buckingham, including a copy of the offer of the crown by the states of Bohemia, dated at Prague, 11—12, August 1619. The same volume also contains a letter§ from Frederic to James, dated Wolfenbuttle, 31st January, 1621, in which he assigns to the king

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* See Ellis's Letters, second series, vol. iii., p. 238.

† *Remarks*, p. 24.

‡ Fol. 210.

§ Fol. 219.

his reasons for receiving the crown from this brave people; while the charge against James, repeated in many different modes and supported by various assertions, of his having sacrificed the interests of Frederic to the projected marriage of his son with the Infanta of Spain, from which he anticipated such mighty advantges, but none of which he obtained,* renders perfectly ludicrous the declaration of Higgons, that to borrow his own dignified phraseology, " he left no stone unturned, to save the Palsgrave by mediations, treaties, and advantageous proposals to the house of Austria."† Nor could that critical enquirer into the foreign and domestic history of these times be so grossly ignorant as not to have known, that when the States of Bohemia determined to proceed to the election of a new king, upon Ferdinand being chosen king of the Romans, their unanimous choice fell upon the Elector Palatine. Equally notorious was it, that this prince hesitated for some time to accept the diadem which they had so earnestly wished to place upon his brow. But being urged by his uncle, Prince Maurice, and the Duke de Bouillon not to decline that which proved to him a fatal gift, and finding that the majority of his allies were favourable to the wishes of the states, he consented to be crowned together with his consort at Prague. So eager however is this censor to catch at any statement of Burnett's which might exhibit him in a disadvantageous light, as a man, or an author, that he shuts his eyes to facts familiar to the merest compiler of history.

We have already shown the invariable repugnance in James to display that powerful interposition for his son-in-law which feeling and sentiment, as well as prudence and equity, seem so obviously to have demanded. Can it be matter of astonishment, therefore, that he should so repeatedly have withstood the importunities of the first dignitary of the church in behalf of those who were so near and ought to have been so dear to him? From the first to the last, and at the hazard of incurring the mortal displeasure of his sovereign, Archbishop Abbot was the zealous partisan of Frederic and Elizabeth. In the letter addressed by him to Secretary Naunton, he strongly urges, "that there should be no going back, but a countenancing of the new king against all the world;" while the following suggestion of the patriotic archbishop must have been as unpalatable to the favourites of James and himself as the bitter waters of Marah to the Jews:—"We must try once again what can be done in this business of a higher nature, and all the money that may be spared is to be turned that way. And perhaps God provided the jewels that were laid up in the Tower to be gathered by the mother for the preservation of her daughter, who, like a noble princess, hath professed to her husband not to leave herself one jewel, rather than not maintain so religious and righteous a cause."* But notwithstanding the whole church with its primate was here inclined to be militant, the following eminently trust-worthy documents will prove that this base-minded sovereign still preferred truckling to Count Gondomar, the celebrated Spanish ambassador, who, like his other dictator, Buckingham, really ruled him at times with a rod of iron, though the pageant of royalty, enthralled as he was by one or the other of his vicegerents, could luxuriate in the idea—for the idea was a belief—that he stood all the while in as proud a position as if the chief potentates of Europe were his tributaries. And even when there were indications of his putting forth something stronger for the interests of his son-in-law than state papers and remonstrances, he soon stopt from fear, or started back from fickleness. King James, says the French ambassador, Jilliers, "throws the affairs of Bohemia into confusion every way, and says sometimes one thing, sometimes another." The same authority again tells us—"The Col. Gray has received permission to levy 1000 men for the King of Bohemia, and has placarded it every where in London, even on the door of the Spanish ambassador, that it is open to every man to take service with that king. Beyond doubt, Gondomar will rouse all the louder complaints of this, knowing how much may be obtained by that method from James. In the end, the latter will sacrifice the colonel in order to satisfy the ambassador," while another report from the same says, "he dare not, out of fear, to the Spanish ambassador, openly recommend the support of the Palatine."*

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* Whoever has studied the reign of James the First, well knows that the alleged reason of the match being so long delayed, viz. the necessity of a dispensation from Rome for the marriage of an Infanta with a Protestant Prince, was a mere pretext on the part of Spain, to gain time for the execution of its selfish and ambitious projects. Lord Herbert addressed a long letter to the king after the match was broken off, which must have convinced James, unless we are to suppose an incredible silliness on his part, that he had been completely deluded and mocked through the whole affair. See this interesting letter in the Harleian MSS. 1581. Fol.

† A writer of that day has observed with as much truth as force, " that he assumed the title of Defender of the Faith, yet suffered the Protestants of Germany and France to be extirpated. That he might almost have purchased such a country as the Palatinate with the money sent on embassies; and that by his promising the French Protestants assistance, he had only made them confident to their ruin."—Wilson, p. 748, in Kennet, *General History*, vol. ii.

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* See *Biog. Brit.*, art. Abbot.

Thus did this most self-degraded of kings, in the highest and deepest sense of the word, whilst he was in his own eyes next to omnipotent—for he had the impious audacity, in one of his lecturing harangues to the Commons, to call himself "a God on earth"—not only bring upon his own person the ribald jest, the sneers, the taunts, the sarcasms and pity of all Europe, but even subjected the elector and electress to the same systematic and mortifying attacks, by his cowardice, by his inveterate habits of wavering and infirmity of purpose, by his low and tricky expedients—in a word, by his total incapacity to preserve to the name and character of England that high station which she had so lately held among the great nations of Europe. "The Spaniards," says Coke, "in their comedies in Flanders, imitated messengers bringing news in haste, that the palatine was likely to have a numerous army on foot, for the King of Denmark would shortly furnish him with 1,000 pickled herrings, the Hollanders with 100,000 butter boxes, and England with 100,000 ambassadors. They pictured King James in one place with a scabbard without a sword; in another, with a sword which nobody could draw out, though divers persons stood pulling at it. In Brussels, they painted him with his pockets hanging out, and not a penny in them, and his purse turned upside down. In Antwerp, they pictured the Queen of Bohemia like a poor Irish mantler, with her hair hanging about her ears, her child at her back, and the king (James) carrying the cradle after her; and every one of the pictures had mottos expressing their malice."†

We proceed now to the most reprehensible of Burnett's attacks upon the memory of King James, in the estimate of Higgons; and certainly we are not in the least surprised that it should have called forth the strongest indignation from the pen of this staunch advocate of the Stuarts. At first sight, in the passage we are about to quote, there is something so highly offensive and outrageously indecent, as if the rancour of Burnett not only delighted to persecute the king with instinctive eagerness and unrelenting hostility, but was not tired of even treading upon his dust, that it is difficult to prevent our reason from being overpowered by our passions and natural impressions:—"Eight years before that time, King James, on a secret jealousy of the Earl of Murray, then esteemed the handsomest man of Scotland, set on the Marquis of Huntly, who was his mortal enemy, to murder him; and by a writing, all in his own hand, he promised to save him harmless for it. He set the house in which he was on fire, and the earl flying away, was followed and murdered, and Huntley sent Gordon of Buckey with the news to the king. Soon after, all who were concerned in that vile fact were pardoned, which laid the king open to much censure."* Upon these observations, Higgons exclaims,—"Not content to have laid King James in his grave, he will not let him be quiet there; but, before he begins the succeeding reign, rallies all his malice to give one parting blow. Hitherto he has not dared positively to accuse him but of common wickedness; but now, to take his leave, he boldly and without mincing the matter peremptorily charges that prince with the greatest crime against God and man, a wilful and premeditated murder." "I cannot, therefore, in the least doubt," he observes in another place, "but that the reader is by this time sufficiently satisfied of the disingenuity and injustice of our author, in this barbarous aspersion on the memory of King James VI. If he had been more candid and sincere in the rest of his book, this one story is enough to blast his credit by destroying all opinion of his faith and probity—this one instance is sufficient to show the man and his principles."†

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* *Hist. of the XVI. and XVII. Cent.*, by Raumer, vol. ii, p. 240, 241.

† Roger Coke's *Detection*, vol. i, p. 126.

In the historian we do not of course expect to find an inventor, but certainly the reader will require the most authentic evidence for the novelty and boldness of Burnett's assertion; since the crimes of a sovereign prince, when once established, become a kind of public guilt and national ignomony; and therefore should never be broadly affirmed, without the fullest deliberation and conviction, and without the largest allowance conceded to human infirmity and to human error.

If we are to rely upon the judgment pronounced in Archbishop Spotteswood's History respecting this horrid transaction, James is to be considered as perfectly and entirely exculpated from all blame in it;‡ but we must not forget that the fulsomely corrupt sycophancy of this prelate towards the monarch, was reckoned somewhat extravagant in that "king-praising age;" so that his authority, wherever his majesty was concerned, is to be regarded with extreme distrust.

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* *History of his own Times*, vol. i, p. 32.

† *Remarks*, p. 38.

‡ He designates it merely "as a commission to apprehend and bring Murray to trial."

Yet no one, however disposed he might be to believe that Burnett at all times prefers the light of truth to the glare of paradox, will tender his suffrage for him on this occasion without some substantial facts. In the following curious document‡ we conceive that the criminality of James is declared as explicitly as words can speak it, averse as the moralist may be from supposing that the acts and deeds of a barbarous system find countenance in the kindred proceedings of more enlightened times:—

"There be two famous houses in the north of Scotland, to wit, Huntly and Murray, the house of Huntly is very mightie in men and goodes, and soe is Murray, but not comparable to the other, as all men knowes. True it is, that neither of the earles are soldiers, yet Murray the most warlike man, both in courage and persone, for he was comly of persone, of a great stature, and stronge of body. Disdayne and injurie, that still invades the minde of man to corrupt all friendly tranquillitie, did all so assayll the good mynde of this valiant Murray; the instrument whereof was Campbell of Caddel, knight, a gentleman of the countrie, whoe the most part of his tyme had spent at court, where hee had learned all the subtilties thereof, not only to his owne greate hurt, but also to the stayne of his posteritie. The knight of Caddell was very familier with the Chancellor Maitland, from whome he received instructions to injender disfriendshippe betwixt Huntly and Murray, and consequently warrs, that distroyes. All the whole commission hee accomplished very learnedly; and soe inflamed the one against the other, that upon a certain day Huntly came with divers of his friends in the sight of the castle of Tarnway, as it were to provoke wars; the which Murray consideringe, commanded his men to shoote; where was slayne a man called Gordon of Clume: after that, the wars increased soe, that at some tyme Huntly, at some tyme Murray was victorious, till at last Huntly tooke occasion to come to court, where hee, and Chancellor Maitland were soe familiar, that first for favour of Huntly, and lastly for hatred, hee had conceived against the name of Stewart, for Bothwell saith hee devised to perswade the king that it was necessarie those two noble men were agreed, for if his majestie should have any thinge to doe against foreigne nations, he woulde accomplish noe goode worke havinge his subjects in division, and therefore willed the kinge to send my Lord of Ochiltry unto Murray, and desire him to repaire to any part neere the court, because Huntly was then present with him, to the end his majestie might the more easily reconcile them. Murray havinge heard the message, simplie beleeved the same, and the messenger knowinge nothinge of the fraude, they came back togeather to a part in the princie of fytt, called Duneburseil, which Murray had chosen for his residence, where my Lord Ochiltry departed from him toward the court to advertise the kynge and the chancellor of the suddaine obegdance that Murray made, but immediately after the kynge by instigation of his Chancellor Maitland, sent commission to all boitts of the queen's ferrie, on back the bords of the river Forth to be all in readines on the south side of the river against the 7th day of February. Thus as the purpose was devised by the said Chancellor and Huntlie, the boates were all readie by commande of the king's letter, and received Huntly, whoe immediately withall expedition and diligence passed the river with horse and men saflie, and after that passed towards the house of Duneburaill where Murray with his mother and quiet household were remayninge for the tyme, accompanied with the Sheriffe of Murray, and there with fire and sworde destroyed him to the death, and then went his way northward. After this the good ladie of Dun, mother to Murray, caused his corps to embalmed with the corps of the said Sheriffe, who was killed with him, and were carryed to Leith; after that shee demanded justice of the kynge, whoe promised it should be obtayned. Huntly was committed to prison, but privilie was assured that hee should not bee hurt, as the end declared, for although he entred into the castell of Blacknes, the 12th day of March, hee was remitted upon the 20th of the same month, express against all justice or equitie, and in particular against the common laws of Scotland. The knight of Caddell was alsoe killed treasonable in the north. At this fact the ministrie and nobillitie were offended in hearte, both against the Prince and his Chancellor, and in speciall, the Earle of Atholl was soe moved, that he made warrs against Huntly, and that by the speciall instigation of Malcolme Tosh, a man unconstant, false, and double minded by the report of all men."

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‡ See Church *History of Scotland.* Fol. 1655, p. 382.

Are there, however, any who will not believe that such fell and implacable hatred had taken possession of James' heart, that he could be accessary either directly or remotely to an act upon which all must look with horror—the murder of a young nobleman of the most promising virtues, the heir of the regent, Murray, and the darling of the nation?* They will readily be disposed to receive the following document* as one of more intrinsic historical value than that to which we have just referred. We will not agitate this question, but intreat the reader to believe us, as willing as himself can be, to admit all possible palliations for the conduct of James; since it never can be matter of indifference to this country that the memory of any one of its past kings should undeservedly be consigned to infamy. We will, then, only contend that the first cited document contains a triumphant refutation of the charge, that Burnett here exhibits that perverse fecundity of imagination which leads a man to invent circumstances such as nothing but the grossest prejudice or infatuation could have invented. "The 7th of February, 1592, (beginning the yeir in January), the Earle of Huntly and his followers killed the Earle of Muaray at Duninbarste (for) the slaughter of John Gordone, brother of Sir Thomas Gordone of Clunie, committed by the Earl of Muaray at Turnolbay, the — December, 1590, the Earle of Huntly obtayned a comisso from his majestie to pursue such as did manteyne or harbour the Earle of Bothwell, by virtue whereof he proceeded against the Earl of Muaray, as ane harb— of him. Whereupon ther sprang a great heartburning and deadlie feud.—Huntlie and the Earle of Muaray's friends."†

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* Matchless for beauty as valour, to the former gift he is said to have owed the loss of his life.—See Douglas's *Peerage of Scotland*, vol. ii, p. 258. There is a Scottish ballad extant which, beginning with these words,

We are, lastly, told by Higgons, that Burnett worries King James as he did his grandson, Charles II., with a most rabid fury, because he affirms "it is certain no king could die less lamented or less esteemed than he was." But he who looks calmly and comprehensively at the conduct of this monarch with respect to his mother, to Raleigh, and to Somerset, will find great difficulty in believing it

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"O! bonny Earl of Murray
He was the queen's love,"

gives an appearance of reality and strength to some historical charges of his having carried on a criminal intercourse with the queen. But even admitting her majesty's gallantries, which have been so pointedly glanced at by several of her cotemporaries, could be verified, a more lawful species of retributive justice might surely have been resorted to by the king, than that barbarous one recorded in the narrative of our text.

* *The History of James, the Sixth King of Scotland, with the instability of his Regents, and their unhappy Ends.*—Harleian MS., 681. Robertson seems not to have been acquainted with the paper to which we have referred. His account of the transaction, therefore, tallies with that of Spottiswood. But the well-known prepossessions of that popular historian in favour of the Stuart line, particularly of the unfortunate Mary, would not render him very anxious to confirm by new evidence the statement of Burnett.

† *The Slaughter of the Earle of Muaray,*—See MS. in the Cottonian Library, *Caligula,* D. i, fo. 1535, apparently written about the time.

to be capable of vindication, however the partiality of interest and feeling may give rise to an infinite diversity of moral judgment in our estimates of principles and actions.

A very capable judge, speaking of Burnett's *History of his own Times*, has observed, that "this work of great instruction and amusement is the more interesting, as he seems to have relied almost entirely on his memory, and very little on the public relations of the events he relates. We have thus the impression of what was passing, as he received it from conversation and general opinion, instead of a mere detail of facts, gleaned from the Gazette, and drawn upon the facts without colour or perspective."* The truth of these observations, we think is strikingly illustrated in the different accounts given by Spottiswood and Burnett, of James's behaviour on the tragical death of his mother. In the following statement of the Archbishop†, it is evidently his object to make the reader believe that James, in the fulness of his grief and indignation at her death, was resolved to come forth with the might of an avenger—to declare open war against Elizabeth, if his particular favourites had not exerted their influence to prevent him from adopting a measure so natural in his situation. "When queen Elizabeth understood that the messenger whom she had sent with a letter to the king, excusing the fact of his mother's death, was returned without audience, she laboured by her ministers, of whom she was ever well furnished, to pacify his mind, and direct him from the war he had intended. These working privately with the king's chief counsellors, and such of his chamber as he was known to affect, dealt so, as they kept off things from breaking forth into open hostility, which was every day expected." Whereas Burnett, in recording this delicate and important transaction does not hesitate to say—" It is true, king James sent one Steward, the ancestor of the Lord Blantyne, who was then of his bed-chamber, with an earnest and threatening message to Queen Elizabeth, for saving his mother. But in one of the intercepted letters of the French ambassadors then in Scotland found among Walsingham's papers, it appears, that the king, young as he was then, was either very double, or very inconstant in his resolutions. The French Ambassador assured him, that Steward had advised the queen to put a speedy end to that business which way she pleased; and that as for his master's anger, he would soon be pacified, if she would but send him dogs and deer. The king was so offended at this, that he said he would hang him up in his boots as soon as he came back, yet when he came back, it was so far from that, that he lay all that night in the bed-chamber."* It is surely no strained supposition to conclude that there must be falsehood at the root of one of these accounts; and it will be found, we suspect, to lie on the side of the Archbishop. For if we look into other contemporary writers on this subject, we shall perceive Burnett's assertions to be confirmed with a graphic and circumstantial accuracy, which affords cogent proof that Spottiswood exercised all his ingenuity, to keep the real fact out of sight; in other words, that his is a gross and palpable misrepresentation. But the reader shall judge for himself: " Lord Hamilton having been employed by Courcellis, the French Ambassador, to speak to James of his mother's danger. " The king's answere was, that the queen, his mother, might well drink the ale and beere, which herselfe had brewed; further, that having bound herselfe to the queene of England to doe nothing againste her, she ought to have kept her promise; notwithstandinge, that he woulde no waye faile in his dutie and naturalle obligatione he oughte her." To Sir George Douglas, who represented how discreditable it would be to allow Elizabeth to put his mother to death, the king said, that " he knew she bore him no more good will than she did the queen of England; and that in truth it was meete for her to meddle with nothing but prayer and serving of God." The earle of Bothwell being asked by the king what he should do, if Elizabeth asked his consent to proceed against his mother, said " yf he did suffer, he were worthye to be hanged the nexte day after:' whereat the kinge laughed, and said he would proceed, for that ' the nobilitie believe indeed that ther is some secret intelligence between the queene of England and the kynge, which is the rather confirmed because the kinge's secretaire and grawe mene onlie made privie to the said Reiths instructions; and the master of Gray's embassy confirms them on this opinion, and that the kinge of Scotts will not declare himselfe openly against her (Elizabeth) though his mother be put to death; unlesse the queen and the Slatts would deprive him of his right to the crowne, which himself hath uttered to Earle Bothewell and Chevaliere Seaton.' Alexander Stewart, sent in the company of the ambassadors ' with more secret charge,' had said to Elizabeth were she even deade, yf the kinge at first shewed himselfe not contented therewith they might easilie satisfy him, in sending him doges and deare. On being informed of this, the kyng was in marvelose collore, and sware, and protested before God, that yf Steward came, he woulde hange him up before he putt off his bootes, and yf the queene meddled with his mother's life, she shoulde knowe he would follow somewhat else than dogges and deare.' Courcellis expresses his fears, that, if Mary's execution should happen, James would digeste it as patiently as he hath done that which passed between the queene of England and Alexander Stuart, whose excuse he hath well allowed and veseth the man as well as before."*

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* See *Memoirs of the Affairs of Europe from the Peace of Utrecht*, p. 376.

† *History of the Church of Scotland*, book vi, p. 359.

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* *History of his own Time*, vol. 1, p. 542.

Within three months, indeed, of his mother's execution we learn from a letter of the Ambassador Randolph to Secretary Walsingham, that "he (the king) determined wholly to depend upon her majesty; and to run her fortune against the whole world." He departed suddenly from Edinburgh to Falkland, merely "to see the deer, that her majesty had sent him, to be taken out of the carts, and put into the park, but with one little void in his wishes. He hath prayed me, says Randolph, that, by your honour, her majesty may be moved to lend him, for the space of two months, a couple of her majesty's yeomen prickers; and a couple of the grooms of the leash. He prayed me also to put your honour in remembrance of some horses and geldings."† No one can doubt, after reading these extracts, that, however keen may have been the feelings of James at the fate of his mother, they were not of very long duration; and the following anecdote would completely and indisputably establish the reported fact, that instead of having his mind wrung with agony on the subject, he rather could permit, nay even encourage, others to display their irony and humour in allusion to it, without seeming to be at all aware, that, in tolerating this jocularity, he was subscribing indirectly to the truth and righteousness of her condemnation. "Soon after the execution of Mary, Melville happened to be introduced to his majesty. James appeared to be in great spirits; laughed, and frisked, and danced about the room, in the boyish manner which he retained, long after he came to man's years. The contrast between this levity, and the sable attire of the company and apartment, struck Melville's fancy, and brought to his recollection the way in which Mary was said to have mourned for the murder of her husband. He expressed his feelings in an impromptu to a gentleman of his acquaintance who stood beside him. The king seeing them smile, came forward and eagerly enquired the cause of their mirth. The gentleman excused himself by saying that it was merely a sally of the principal's humour, which had extorted a smile from him. His Majesty then applied to Melville, who felt averse to gratify the royal curiosity, but James, insisting on his demand, and promising not to resent any freedom that might have been used, he repeated these lines:—

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* See M'Crie's *Life of Melville*, Note cc, vol. i, p. 461.

† Ellis's *Letters on English History*, second Series, vol. iii, p. 123.

Quid sibi vult tantus lugubri sub veste cachinnus
Scilicit hic matrem deflet; ut illa patrem."[*]

But if it be pertinaciously asserted, that we here lay too much stress upon a few isolated examples, and that further corroboration and argument are necessary to convict James of that moral depravity at which so many of his subjects stood aghast, we will call the attention of the reader to the following curious document, as it proves, first, the irresistable or rather unresisted ascendancy which Elizabeth wielded over James, by indulging him with ample supplies of money; and secondly, that as they were granted within the very year of his mother's execution, it mattered not whether the English queen announced weal or woe to him, respecting her fate,[†] provided she filled his empty coffers. "Memorandum, that *Anno Domini*, 1585, I was sente into Scotlande by her majestie, to the kynge there. I receavede by her majesty's order, out of th' eyschecker, £2000, to be employed for her highnesse's service upon the noblemen and other then at my discretion and as I found cawse, which sum of monie I bestowede as then as I was wylled, and as the same was employed from tyme to tyme advertised by my lettres to Mr. Secretary Walsingham, as in some of my lettres of that yere unto his honour it might appere, as also be found in some notes or copies of lettres wrytten by myselfe and yet remayninge amonge wryttinge of Scottysshe cawses, for the tyme of my beinge ther in that yere. This I wryte for my discharge; for that other accompte I cannot make none, nor yet of the £4000 which I delivered unto the kynge selfe by lyke commandments from her majestie in A. D. 1586, for that in such cases, nether princes gyve bylles of their handes, nor any other that receave the lyke rewards or guifts from princes, for daynger or reproche unto themselves for receavinge of the same. Sondrye other tymes since her majesties reign, I have receaved divers other great soms of monie, to be delivered as well to my L. of Murraye as my L. Moreton and other, for which I have no bylles of ther handes to shewe nor was ever wylled to demande anye, but by my lettres advertisede of the payment ther of, and therein my word and wrytinge sufficientlie creditede, as also suche monie as at sundrye tymes I have geven for intelligens, and non farther accompte made then my owne worde and credit, as the lyke is used to all other embassadors in her majesties service.

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[*] See M'Crie's *Life of Melville*, vol. i, p. 286.

[†] If it be true, that Mary betrayed such an unnatural hardness of heart, as not only to disinherit her son, but to enter into a conspiracy for kidnapping and delivering him a prisoner to the Spanish Monarch, from whom his liberty was only to be purchased at the price of his turning Roman Catholic, (See *Murden Papers*, vol i, p. 84,) it is not so surprising in James to have cared so little for such a mother.

"Two thousand pounds I delivered to Mr. Robert Browne, for which I have a bylle of his hande.

"Wrytten by me, the 8th of October, 1587, at my house in London.

"Thomas Randolph."*

Perhaps we may be here reminded, that James could not be so profoundly insensible to the unredressed wrongs of his parent as is represented in this singular paper, because Strype† has quoted from the Cottonian library the following declaration of James:—"I am unable to revenge the heinous murder committed on my dearest mother. First, in respect to my tender youth, not trained up in dexterity of arms, either to withstand injuries, or to conquor my own right; being at all times bygone detained in captivity. Next my excessive cowpit (cupidity) from hand to hand, from needy to needy, to greedy and greedy; having sufficient patrimony and casualty, and yet as none at all in store."

Who now can fluctuate in opinion, unless they impugn the authenticity of the paper here quoted, that his mother's death made no more impression upon James than the spray upon a rock, or the pleasure of melody and harmony upon a deaf man? especially when it is remembered that his filial sensibilities were so torpid as to grant pardon to Archibald Douglas, one of the murderers of his father, and still more to outrage public opinion immediately afterwards by nominating him ambassador to England.‡

If history did not record the fact, from the reason of the thing itself, and the ordinary workings of humanity and justice, could there be a doubt that there should be one cry of unmingled reprobation throughout the land when Sir Walter Raleigh's head was sentenced to be cut off? It was no wonder then that Burnett should say, while sympathizing with the fate of this illustrious victim to sceptred hatred and tyranny, that "the first condemnation of Sir Walter was very black, but the executing him after so many years and after an employment that had been given him, was counted a barbarous sacrificing him to the Spaniards."* Most readers of English History are aware that Sir Walter Raleigh was accused of conspiring to overthrow the government, and to place Arabella Stewart on the throne. But no satisfactory clue has been afforded to this revolutionary labyrinth. In what manner the whole machinery of insurrection was to be directed, when the contrivers of it were so much at variance with each other in their religious and political principles, history has in vain attempted to discover. Upon a paper, however, purporting to be the examination or confession of Lord Cobham, the supposed originator of this great political achievement, Sir Walter was convicted of high treason.† A publicist, or lawyer of the present day, whether whig or tory, would be seized with mingled emotions of surprise and disgust, who should for the first time read, that when Raleigh insisted that two witnesses were indispensable to prove the fact of his imputed guilt—that the common law, the statute law, and the law of God‡ alike required such evidence—and that the witnesses ought to appear in court and be confronted with the accused, the judges had the audacity to declare that the statutes of the 1st of Ed. VI, and 5th and 6th of Ed. VI, were repealed.§ But how would those sensations be increased, when he had been told that that miracle of juridical learning, Sir Edward Coke himself affirmed that those noble statutes were no longer in force, which it is well known exacted that no mortal judge should consign a fellow creature to death without the witnesses being brought into open court, face to face before the accused! Well might the able and learned prisoner exclain, "You try me then by the Spanish Inquisition, if you proceed on examination, not on witnesses." The jurist-consult would also mourn, that Coke, who acted on this memorable trial as attorney general, in his overboiling animosity and hatred towards Raleigh—for the epithets monster, vile viper, execrable traitor, spider of hell, damnable atheist,* were applied by him to the prisoner, in his opening speech—

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* See Ellis's *Letters on English History*, second series, vol. iii, p. 124.

† See his *Annals*, vol. iii, p. 382.

‡ Miss Aikin's *Memoirs of the Court of King James I*, vol. i, p. 17.

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* *History of his own Time*, vol. i, p. 29.

† For the report of the trial, see the conclusion of Oldy's Life of Raleigh, prefixed to the best edition of his *History of the World*, and Phillip's *State Trials*, vol. i, p. 83.

‡ "At the mouth of two witnesses, or three witnesses, shall he that is worthy of death be put to death; but at the mouth of one witness he shall not be put to death."—*Deut.*, chap. xvii, v. 5.

§ In the opening days of free discussion, Sir John Hawles, a solicitor general in the reign of William III, in his passion for justice and wisdom, has warmly asked, "I would know by what law is the deposition of a person who might be brought face to face to the prisoner, read as evidence; I would know by what law it is forbidden that the accuser should be brought face to face to the accused; I would know by what law Brook's deposition of what the Lord Cobham told him of Raleigh—I would know by what law the story Dyer told of what an unknown man said to him at Lisbon of Don Raleigh, was evidence against Raleigh; I would know by what statute the statutes of the twenty-fifth of Edward III, and fifth of Edward VI, are repealed."—See *Reply to Sir Bartholomew Shower's Magistracy and Government of England vindicated*, p. 32; and Winwood, vol. ii, p. 8, 11. This crown officer and

most upright man was a great advocate for the distribution of uncostly justice, and from his remarks on Colledge's trial, appears to have held in distrust the *private opinions of king's counsel* on great constitutional points, conceiving "that they made themselves partys in such matters."—See 8 *St. Tr.*, 723.

* Most unjustly, Sir Walter has passed with his contemporaries for a freethinker; which opinion Mr. Hume has sought to perpetuate by charging him with infidelity—a charge which came with no peculiar fitness from this quarter; and many writers, upon his authority, have chosen to take from him the noblest prerogative of his nature, that of being "*a religious animal.*" Dr. Parr, who has examined the writings of Raleigh attentively, has rebuked Mr. Butler for adopting that notion of the sceptic historian:—"Why do you follow Hume, in representing Raleigh as an infidel? For heaven's sake, dear Sir, look to his Preface to his *History of the World;* look at his *Letters* in a little 18mo, and here, but here only, you will find a tract which led Hume to talk of Raleigh as an unbeliever. It is an epitome of the principles of the old sceptics; and to me, who, like Dr. Clarke and Mr. Hume, am a reader of Sextus Empiricus, it is very intelligible. Indeed, Mr. Butler, it is a most ingenious performance: but mark me well—it is a mere *lusus ingenii.*"—Butler's *Reminiscences*, vol. ii, p. 232. But did not the writings of this remarkable person contain internal proof of the habitual conviction of his mind that Christianity was true, the weight of evidence and argument in favour of Raleigh being a believing christian is great from this fact alone, that the companion of his studies and sharer of his toils in the new world, Thomas Hariot, was eminently such. "Many times," says he, "and in every towne where I came, according as I was able, I made declaration of the contents of the Bible, that therein was set forth the true and onely God and his mightie workes; that therein was contained the true doctrine of salvation through Christ, with many particularities of miracles and chiefe points of religion, as I was able then to utter and thought fit for the time. And although I told them the book materially and of itself was not of any such virtue, as I thought they did conceive, but onely the doctrine therein conteined, yet would many be glad to touch it, to embrace it, to kisse it, to show their hungry desire of that knowledge which was spoken of."—Harriot's

should have denied a doctrine which his calm and settled opinion afterwards so fully admitted.* We have his full admission, which has since been confirmed by volumes of English law, that a single witness was not sufficient to convict a person of high treason; yet, in expounding the rationale of the ancient doctrine, in that respect, it would have been most satisfactory to the philosopher and philanthropist if he had explained why two witnesses are required to prove the guilt of treason, and but one only if the indictment refer to any other capital felony.

We are told that Raleigh came to his trial with all the signs and symptoms of his being the most unpopular man in England; but the close of it converted him into the most popular. Now, it costs us no effort to believe this assertion perfectly consistent with the truth, if we keep in mind these two preliminary facts to it:— first, that the information of one witness sworn, retracted and re-sworn—and that witness, Cobham, his friend and accomplice—but not produced, was the evidence against Raleigh: and, secondly, that the self-command, the noble bearing, the legal skill, the tact and pointed quickness of reply, and precision and polish of expression, displayed by Raleigh at this crisis of his destiny, extorted even the admiration of one who seems to have had no respect for the personal character of this extraordinary man. "Sir Walter Raleigh served for a whole act, and played all the parts himself. He answered, indeed, with that temper, wit, learning, courage, and judgment, that, save that it went with the hazard of his life, it was the happiest day that ever he spent. And so well did he shift all advantages that were taken against him, that were not *fama malum gravius, quam res,* and an ill name half hanged in the opinion of all men, he had been acquitted."* Such, in short, was the superlative exam-

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Narrative in Hackluyt's *Collection of Early Voyages, &c.*, vol. iii, p. 338. But the verses of Sir Walter, entitled My Pilgrimages, are alone sufficient to prove his believing view of the cross, or of the high mediatorship opened between God and man in the New Testament.—See Cayley's *Life of Raleigh*, vol. ii, p. 159.

* "*Sic libere animam meam liberavi,*" 3 Inst. 27, are the words of Sir Edward, after pronouncing, in the most authoritative tone, that the statutes of 1 Edw. VI, and 5 Edw. VI, had never been repealed. Pity it was, that his conscience had not extorted this memorable confession from him during the trial; for then, at the close of it, he would not have been so frenzied with the passions of hatred and revenge, as impiously to exclaim, "Now Jesus Christ shall be glorified."—See *Secret Hist. of Court of James I*, vol. i, p. 159.

† See Letter of Sir Dudley Carleton, in the Hardwicke *State Papers*, vol. i, p. 378.

ample of capacity and invincibility of temper exhibited by Raleigh, that a Scotchman, who was appointed to make a report of the proceedings to the king, declared that, previously to Sir Walter's entering upon his vindication, he would have travelled a hundred miles to see him hanged in the morning, and would have gone the same distance to save his life before they separated in the evening.

The circumstance of Raleigh stabbing himself upon his committal to the Tower, is broadly assumed as an attestation of the truth of the charges that could be brought against him. But the inference, we think, is more logical and correct, that, in utter despair of his acquittal, from the dishonourable practices resorted to for his condemnation, the fierce and haughty soul of this "rare renowned knight," (as he is quaintly styled by Howell, the celebrated letter writer), could ill brook to remain on earth a living monument of the tyranny of James, and of a systematized series of goading annoyances from his prime minister, Cecil;* and that, therefore, having so much of the old Roman spirit, he attempted self-destruction. More is not necessary to be said to prove the total disregard of justice in the administration of the law towards Sir Walter, which, indeed, the government tacitly acknowledged, since upon no other principle can be explained the grant of a reprieve to this distinguished man after his conviction. So, then, those who hold the protection of our legal rights or good laws well dispensed to be the nerves of the state (to borrow the figurative language of Bacon), must allow that there is great truth in the remark of Burnett, that "the first condemnation of Sir Walter was very black;" while there cannot be the smallest doubt as to the propriety of his second observation, that "executing of him after so many years, and after an employment that had been given him, was counted a barbarous sacrificing him to the Spaniards." It seems, indeed, to be supposed by certain writers, that James proceeded to extremities against Sir Walter for some alleged misconduct in South America. "You might think it heavy," said the tool and minion of the court, the Lord Chief Justice Montague, in passing sentence upon him, "if this were done in cold blood, to call you to execution. But it is not so. For *new* offences have stirred up his majesty's justice to remember to revive what the law hath formerly cast upon you." "With those new offences, however," observes an acute and learned writer, "whatever they might be, he was never publickly charged; yet was he accused without a public prosecutor, and condemned without a trial."* These few short facts illustrate the cruelty and illegality of his sentence. After fourteen years imprisonment, Sir Walter received from the king the command of a fleet, to be employed in discovering a gold mine in South America. The expedition proved unsuccessful; and upon his return home, after a solemn mockery of conference, held by all the judges, upon his case, he was decapitated under the authority of a special warrant, signed by the king, in direct opposition to the soundest principles of justice and humanity. For if the conclusion of the law be true, that authority and confidence cannot be bestowed upon a traitor condemned to death, then the royal commission of admiral† was equivalent to a formal pardon. But as a crowning characteristic of the black deposit of inveterate antipathy and pernicious passion that was lodged in the bosom of James against Raleigh,‡ it may be mentioned, that he absolutely made it a merit with the court of Madrid§ that he had shed the blood of this variously gifted* person to afford them unmodified satisfaction.

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* The never-to-be-forgiven offence of Raleigh was, presenting a memorial to James, at his accession, in which, says Kennet (*Complete History of England*, vol. ii, p. 663), "with a singular bitterness of style, he vindicates Queen Elizabeth from the death of Mary, and lays the death of that unfortunate queen chiefly at the door of Cecil, the monarch's minister, and his father; for which he appeals to Davison, then in prison, the man that had despatched the warrant for her execution contrary to Queen Elizabeth's express command."

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* Philips's *State Trials*, vol. i, p. 79.

† Confirmatory of this position, is the following address of Bacon to Sir Walter:—"Sir, The knee limber of your voyage is money. Spare your purse in this particular, for, upon my life, you have a sufficient pardon for what is past already, the king having, under his broad seal, made you admiral of the fleet, and given you power of martial law over your officers and soldiers."—See Howell's *Letters*.

‡ How bent James must have been in pursuing his victim to death, when Queen Anne penned the following curious letter to Buckingham, and yet neither she nor the favourite could elicit a particle of compassionate feeling in the royal breast towards the prisoner. "My kind dog, If I have any power or credit with you, I pray you let me have a trial of it at this time, in dealing sincerely and earnestly with the king that Sir Walter Raleigh's life may not be called in question. If you do it, so that the success answer my expectation, assure yourself that I will take it extraordinary kindly at your hands, and rest one that wisheth you well, and desires you to continue still, as you have been, a true servant to your master."—Dalrymple, vol. i, p. 78.

§ In the following extracts, the infamous policy of James, in this respect, will appear to be fully developed:—"But withal, I shall judge them (the Spaniards) the most unworthy and perfidious people of the world; and the more for that his majesty hath given them so many testimonies of his sincere intention toward them, which he daily continueth, as now of late, by the causing Sir Walter Raleigh to be put to death, *chiefly for giving them satis-*

Of Mr. Hume's disposition to praise, at least to cast a friendly shade over the worst actions of the Stuarts, no one who has even glanced at his narrative of their reigns can doubt. Having enlisted himself, then, as their willing champion, he was in duty bound with much pains to vindicate the father of that singularly unfortunate line, in what related to the execution of Raleigh: but, on this occasion, he has mustered a very incompetent defence. The principle momenta of his argument rest upon a "declaration by authority" put forth at the time, to the averments of which he claims implicit credence, on the ground of its being subscribed by six privy councillors. Now, it has long been a settled point with the curious readers of English history, that as little can be said in praise of Hume's researches as of his fidelity. We have, therefore, thought our time not ill spent in investigating a matter of great importance,

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faction. Further you may let them know, how able a man Sir Walter was to have done his majesty service, if he should have been pleased to have employed him. Yet, to give them content, he hath not spared him; when, by preserving him, he might have given great satisfaction to his subjects, and had at his command upon all occasions as useful a man as served any prince in Christendom."—See Rushworth, vol. i, p. 96. After this letter, it surely ought not to be enumerated among the paradoxical positions advanced by Sir Walter, without any degree of scrupulosity, that the king had disclosed the whole design of his voyage to Gondomar; since the following passage in a letter from Buckingham to Winwood so clearly establishes the truth of Sir Walter's accusation:—"His majesty perceiveth by a letter he hath received from the Spanish ambassador, that you have not been with him to acquaint him with the order taken by his majesty about Sir Walter Raleigh's voyage; and therefore would have you go to him as soon as you can possible, to relate unto him particularly his majesty's care of that business, and the course he hath taken therein."—See Hardwicke, *State Papers*, vol. i, p. 398.

* Of his multifarious accomplishments and chivalrous character, Anthony Wood has given the following graphic description:—"Authors are perplexed under what topic to place him, whether of statesman, seaman, soldier, chemist, or chronologer, for in all these he did excel; and it still remains a dispute whether the age he lived in was more obliged to his pen or his sword; the one being busy in conquering the new, the other in so bravely describing the old world. The truth is, he was unfortunate in nothing else but the greatness of his wit and advancement. His eminent worth was such, both in domestic polity, foreign expedition and discoveries, arts and literature, both practive and contemplative, that they seemed at once to conquer both example and imitation. Those that knew him well, esteemed him to be a person born to that only which he went about, so dextrious was he in all or most of his undertakings, in court, or camp, by sea, by land, with sword, with pen."

as it affected the guilt of Raleigh. For his vouchers, the historian refers us to the third volume of the *Harleian Miscellany*, No. 2: but they who are unacquainted with the paper in question, will stare at being told that it bears no signature at all. Not one of the members of the privy council signed it; and what is still more astonishing, from the first to the last page of the paper, it is impossible to find a sentence which can furnish a pretext for the very natural supposition that the declaration at least professed to have their assent or sanction. *Not a word further need be said respecting a paper as remarkable for the plausibility of the arguments as for the force of the expressions, and which was in all probability composed by the royal pen: for though the acquirements of kings are in general magnified, yet whoever examines with attention the *Basilicon Doron*, and the proclamations, speeches, and messages to parliament of James, will agree with Hume, that " he possessed no mean genius." In a case, then, where *self* was so deeply interested, and where the paramount purpose and end was so completely to criminate Raleigh as to make his death appear a sacrifice to public justice, it is presumable, that James was not so enamoured of the character of a tyrant, however he acted with all its blind recklessness on this and other occasions, as to be indifferent to the contempt and abhorrence of posterity, provided that he could escape them by easily taking refuge in the display of his dialectic powers.

It may be said of Burnett, as it has since been said of another eminent man, though of a very different cast of mind (Priestly), that he followed truth, as a man who hawks follows his sport at full speed, straight forward, looking only upwards, and regardless into what difficulties the chace may lead him. In every point of view, then, it would be prejudice, and not sound criticism to assert, that any thing but sincere love of truth led our historian to declare, " that the whole business of the Earl of Somerset's rise and fall, of the Countess of Essex and Overbury, the putting inferior persons to death for that infamous poisoning, and the sparing of the principals, both the Earle of Somerset and his Lady, were so odious and inhuman, that it quite sunk the reputation of a reign that on many other accounts, was already much exposed to contempt and censure; which was the more sensible, because it succeeded such a glorious and happy one."† Yet in thus alluding to the mysterious tale of Overbury's murder, with his usual indulgence to the king, Burnett has failed to notice the great point which so materially tends to criminate him. It will be seen by the following account that the bishop has not mentioned the perturbed anxiety* evinced by James at the menacing speeches uttered by Somerset on his commitment to the Tower; those paroxysms of passion which disclose a mind placed between the rational and the insane. "The king had assured him (Somerset) that he should not come to any tryal, neither durst the king bring him to tryal." This was in an high strain, and in language not well understood by Sir George More (the lieutenant in Elwary's room). Away then goes More to Greenwich, as late as it was (being twelve at night); bounseth at the back stayres, as if mad, to whom came Jo Loveston, one of the grooms, out of his bed, enquires the reason of that distemper at so late a season. More tells him he must speak with the king. Lovestone replyes, 'he is quiet,' (which in the Scottish dialect is fast asleep,) Moore says, 'you must awake him.' Moore was called in, (the chamber left to the king and Moore). He tells the king those passages, and desired to be directed by the king, for he was gone beyond his owne reason to heare such bold and undutiful expressions from a faulty subject against a just soveraigne. The king falls into a passion of tears: 'On my soule, Moore, I wot not what to do! thou art a wise man, help me in this great straight, and thou shalt finde thou doest for a thankful master, with other sad expressions. Moore leaves the king in that passion, but assures him he will prove the utmost of his wit to serve his majesty, and was really rewarded with a suit worth to him £1500."

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* This paper is also published in Somers's Tracts, vol. ii, p. 18; and with it a miserable defence for Sir Richard Stukely, who betrayed Raleigh.

† *History of his own Time*, vol i.

Now some writers have ascribed the king's extraordinary conduct to guilt, and others to a return of affection for his ancient favorite. Dr. Lingard assigns these emotions to the latter cause; but has hazarded this positive opinion upon a very slender foundation. The stern and bitter exclamation of James at his last parting with Somerset, "The deil go with thee, for I will never see thy face more," is in itself conclusive enough of a breach having taken place between them, which was not to be repaired. And his violent imprecations to Coke, shortly after the arrest of the earl, "God's curse be upon you and yours, if you spare any of them; and God's curse be upon me and mine if I pardon any of them,"† further assist our belief, that Somerset was in possession of some important secret, the disclosure of which would deeply affect the honour of the king, even they will scarcely venture to deny whose grand principle is to doubts facts and to differ from generally received opinions. Carte, with his accustomed partiality to the house of Stuart, overlooks the matter altogether; and Hume treats it as a thing of no moment. Truth is not easily dug up; but if Hume had been resolved to toil for it, we question much whether he would have allowed his readers to reap the benefit of his search at the expence of James' character, being so strongly prepossessed in his favour.

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* See Weldon and *Archæology*, vol. xvii, xviii.

† See Weldon, *Court and Character of King James*, p. 92, and Coke, *Detection*, p. 78. Little could Somerset have anticipated any prognostics of his

Supposing the nature of Prince Henry's disease had not been ascertained beyond the possibility of cavil, it might be fairly conjectured that the idea of being in any way suspected of conniving, though not of participating in the death of his son, was the source of such misery and apprehension to the king. It therefore strikes us, we own, that the threat made by Somerset in his petition to James, the dread * of the king lest he should address the court—his ordering him to be hood-winked and removed from the bar in case he made the attempt, his engaging Bacon the attorney-general so to manage the trial, as to prevent the judges from getting into the real clue of it, are so many concurrent circumstances for the proba-

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fallen fortunes when on parting with the king he kissed his hand, and James in return, hung about his neck," says Weldon, "slabbering his cheeks, saying, 'For God's sake when shall I see thee again. On my soul I shall neither eat nor sleep until you come again. The earl told him on Monday, (this being on the Friday). For God's sake let me said the king. Shall I, shall I? Then lolled about his neck. Then for God's sake, give thy lady this kiss for me." Mr. Hallam has observed, "that James was all his life rather a bold liar than a good dissembler'.'—*Const. Hist.* vol. i, p. 319, note. With all due deference to this high authority, we would say that no Joseph Surface could have played both parts more effectively on the stage, than did this royal actor in his palace.

* For prevention thereof, he the king, had two servants placed on each side of him with a cloak on their arms, giving them withall a peremptory order, if that Somerset did any way fly out on the king, they should instantly hood-wink him with that cloak, take him violently from the bar, and carry him away; for which he would secure them from any danger, and they should not also want a bountiful reward. But the earle finding himselfe overreached, recollected a better temper, and went on calmly in his tryall, where he held the company untill seven at night. But who had seene the kinges restlesse motion all that day, sending to every boat he saw landing at the bridge, cursing all that came without tidings, would have easily judged all was not right, and there had been some grounds for his fears of Somerset's boldness; but at last one bring him word he was condemned, and the passages all was quiet. This is the very relation from Moore's owne mouth, and this

bility at least of Sir Walter Scott's opinion, "that James's alarm is to be attributed to a still more flagitious cause than being accessary to the murder of Prince Henry."* And was there not much in the life and conduct of James that deservedly subjected him to the heavy suspicion of indulging in unnatural inclinations? It is related by Osborne, "that Somerset and Buckingham laboured to resemble women in the effeminacy of their dress, and exceeded even the worst in the grossness of their gestures."†

Queen Anne herself, has also some contemptuous but very significant insinuations against the *dear ones*,‡ while the revolting picture drawn by Sir Antony Weldon, and others,§ of James and his dissolute and profligate courtiers, would incline us to believe, that among them, every vice and crime were practised.¶ But the reply here is, that Weldon was a satirist, and the statement of satirists are to be received with considerable caution and distrust. Time, however, which brings new things to light, has put to rest the question concerning his credibility, since the printing in the *Archæologia*,‖ of Sir George More's letters to the Lieutenant of the Tower. In one of these to which we have before referred, it must be acknowledged, that we met an expression, which certainly does favour the presumption, that James' inquietude of mind arose from the fear of being publickly named by Somerset, as a partner of his guilt in the murder of Overbury; for to prove that this great criminal was the author of it, we can have no clearer or more explicit testimony than his own, in the letter in which he sues for mercy, or rather

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told verbatim in Wanstead Parke to two gentlemen, (of which the author was one) who were both left by him to their owne freedome without engaging them, even in those times of high distemperatures, unto a faithful secresie in concealing it; yet though he failed in his wisdome, they failed not in that worth inherent in every noble spirit, never speaking of it till after the kinge's death. See notes to Somers' *State Tracts*, p. 233, 252, 262, &c.

* See Note in his Edition of *Somers's Tracts*, vol. ii, p. 488.

† *Secret History of the Court of King James*, p. 14.

‡ The name of James and woman-hater was considered by many of his courtiers as synonimous. Carte and Birch state on the authority of the French Ambassador's dispatches, that he suffered the women to be presented to him on their knees; while he spoke of them and even of his queen as if they were objects of mingled contempt and disgust.

§ The court was the source and spring "of all sorts of shameful vices," abounding among the higher orders.—See Fulke, Lord Brooke's *Five Years of King*.

¶ There is not a lobby or chamber, if it could speak, but would verify this See Peyton, 369, and Wilson, 728, *apud* Kennet.

‖ Vol. xviii.

demands it from James:—"God knoweis it is only a trikke of ydle brain hoaping thairby to shifte his tryall, but is easie to bee seene, that he wolde threattain me, with laying an aspersion upon me of being in some sorte accessore to his cryme."* There are, however, so many asserted facts in Weldon and other contemporary authorities, which denote that open defiance of the most respectable feelings and the most ordinary decencies in the conduct of James, that the suspicion of his being addicted to a crime, which cannot even be named in a Christian country, rises to its highest point.

In the documents printed in the *Archæologia*, there is also circumstantial evidence of the following remarkable fact, recorded by Burnett, which like many others from his pen, have been so tardily accredited. "King James in the end of his reign was become weary of the Duke of Buckingham, who treated him with such an air of insolent contempt, that he seemed at last resolved to throw him off, but could not think of taking the load of government on himself, and so resolved to bring the Earl of Somerset again into favour, as that lord reported it to some from whom I had it. He met with him in the night in the gardens at Theobald's, two bedchamber men were only in the secret, the king embraced him tenderly, and with many tears. The Earl of Somerset believed the secret was not well kept, for soon after the king was taken ill, with some fits of an ague and died of it."† The results of this extraordinary interview, for so it must be termed, was a free pardon granted to the earl. A memorial drawn up by Somerset evidently at the king's command, and most probably, as Mr. Hallam observes,‡ after this clandestine interview, contains a variety of charges, and some of them very strong ones, against Buckingham. But here the matter ended, whether from James having been reconciled to the duke, or whether his predominant timidity, which made him crouch under every threat, while he seemed to dictate the law, *sic volo, sic jubeo, stet pro ratione voluntas*—despaired of ruining him whom he feared as an enemy, but no longer wished to have as a friend. For never did a subject more completely rule his sovereign, than at this time did his majesty's "poor slave and dog, Steenie." Conceive a prime minister of the present day dispatching this short missive to his royal master:—"In obedience to your commands, I will tell the house of parliament that you have taken such a fierce rheum and cough, as not knowing how you will be this night, you are not yet able to appoint them a day of hearing; but I will forbear to tell them, that notwithstanding your cold, you were able to speak with the king of Spain's instruments, though not with your own subjects."*

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* P. 355.

† *History of his own Time*, vol. i. p. 28.

‡ *Const. Hist.*, vol. i, p. 381, note.

It has been lately said of James by a celebrated writer, "that he was one of those kings whom God seems to send for the express purpose of hastening revolutions." If we are to listen, however, to our homily on wilful rebellion, we shall there find it to be sinful "to rebel even against undiscreet or evil princes;" and very favourable to this position are the words of Lord Bacon:—"Allegiance is of greater extent and dimension, than laws or kingdoms, and cannot consist by the laws merely, because it began before laws, it continueth after laws, and it is in vigour when laws are suspended and have not had their force."†

But it would appear that Bishop Hoadly, like Gallio, cared for none of these things, and thought by a sort of specious acuteness he could cut this knotty point at once, by affirming "that we are only forbidden to resist good governors" in open defiance of the orthodox opinion (for in a bishop we must not suppose it ignorance or forgetfulness,) that the doctrine of non-resistance is promulgated in the clearest and most unequivocal manner by the scriptures. We profess to enter no further upon this deep and dangerous question, than by saying, that we shall be ranked among the most offending, if it be sinful to think, that those high Tory writers who have glossed over the black crimes of James with the gentle epithets of failings or infirmities, thus turning stains into spots, and spots into specks, betray as great a disregard of historical justice, as that minister of religion would of his high calling who should be afraid to call vice, vice; and infamy, infamy. A more striking illustration of this remark cannot be evinced than in Hume's declaration, "that in all history it would be difficult to find a reign more unspotted and unblemished than that of James."‡

Why, if an unquestioning submission "to the powers that be," had not been classed among his religious and political duties, no enlightened Englishman of that day would have scarcely endured the wantonness of his despotism. At all events, it is impossible, but that he must have felt an inward loathing against a government, whose acts were notoriously influenced by foreign gold;* a government, under which bishopricks and deaneries were vendible† the most stringent monopolies imposed, not upon nice emergencies only, but as habitual practices; ‡ proclamations quite unwarranted by the ancient customs and laws of the land issued against the personal liberty of the subject upon the most petty § occasions, executions by fire,‖ revived on the pretext of an unrepealed statute against heresy, a government under which titles ¶ of honour were openly set up for sale to the highest bidder, the great officers of the state convicted of peculation, **and a lord chancellor, (the heart sickens here to pronounce the name of Bacon,) * impeached for receiving bribes from the suitors in his court. And yet notwithstanding the notoriety of all these disgraceful events, not to say a word of the divorce of Lady Essex, the murder of Overbury, the pardon of his murderer, and the elevation of Villiers, whose public and private conduct when first minister of the crown is synonymous with all that is absurd or execrable, has Hume the hardihood to make the assertion just quoted. That man then, to our thinking, must be made up of irreconcilable contradictions, who after the records of these transactions can affirm, that Burnett's is a judgment uttered by prejudice, when he so emphatically said in speaking of James, "It is certain, no king could die less lamented, or less esteemed than he was."*

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* See Hardwicke, *State Papers*, vol. i. p. 460.

† Winwood, vol. iii, p. 239, and Coke's *Detection*, p. 65.

‡ *History of England*, vol. vi, p. 153.

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* *State Trials*, vol. ii, p. 596. It was only by a judicious application of bribes, that Gondomar was enabled to keep those of the Council who passed for sincere Romanists, firm to the union of Prince Charles with the Infanta. —See Wilson and Rushworth, vol. i, p. 19.

† There were, " says Weldon, " books of rates on all the offices, bishoprics, and deaneries in England."—p. 122.

‡ The nation, says Osborne, grew feeble, over-opprest by them.

§ See those for preventing attendance at the coronation and against country gentlemen coming to James on hunting days; and ordering them to leave London and return to their country houses on pain of condign punishment.—Lodge's *Illustrations of British History*, vol. iii, p. 270; and Rymer, vol. xvi, p. 517, 521, 527.

‖ Two Unitarians, named Bartbolomew Legate and Edward Wrightman, were thus handed over to the secular arm, by James.—See the writ for their execution, in Howell, *State Trials*, vol. ii, p. 731, 736. The third was condemned to be burnt, but his sentence was remitted in consequence of the loud murmurs uttered by the spectators, when the two former atoned for their errors at the stake. Yet James' humanity only extended so far as to mitigate his punishment into imprisonment for life.—See Fuller, lib. 10, p. 62, 64.

¶ In a letter to his *Sowship*, the familiar appellation given to James by Buckingham and published in the Dalrymple papers, vol. i, p. 164, this worthless minister informs his equally worthless master, that he has sold a peerage to Sir Francis Leake, and desires the patent to be signed. No prince, indeed, so much degraded the peerage as James did by selling patents for it at large prices; and when he created the order of Baronets the purchased price for this new species of knighthood, was a thousand pounds apiece. Among the condensed and apothegmatical sayings of James, for we have many of them recorded, one of the most felicitous in expression is the following, " Perceiving a country gentleman approach him in considerable confusion of manner and countenance, to receive his vended honour, he exclaimed, ' What, hold up thy head man, I have more reason to be ashamed than thou."—Miss Aiken's *Life of James I.*, vol. i, p. 164.

** Who can read without high indignation of the impeachment of a Lord Treasurer for bribery. One of the charges against the Earl of Middlesex was of receiving a gratuity for taking off the duty of £3 per ton which he

M. R. S. L.

CRITICAL NOTICES OF NEW PUBLICATIONS.

A Lecture delivered at the Opening of the Chertsey Literary and Scientific Institution, January 4th, 1838*;* by the Rev. Robert Jones, D.D., M.R.S.L., Vicar of Bedfont, and Vice-president of the Institution at Staines: 8vo, London, 1838, pp. 38.

With their small heads and little minds paralyzed by the virulence of a senseless and shameless vanity, there may be giddy sciolists who, from the profundity of their shallowness, will wish to disparage the style and objects of Dr. Jones' Lecture, by whispering to "birds of

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had laid upon French wines. His guilt must have been very manifest; or else the voice of the whole house of peers would not have been against him. Sir Fulk Greville, for the Chancellorship of the Exchequer gave £4000 to Lady Suffolk and Lady Somerset.—Birch, Negociations, 320.

‖ The fairest diamond, says Howell, may have a flaw in it, when alluding to this great man's fall by corruption; but how familiar must that practice have been, when "the master of wisdom" could offer this plea in mitigation of misconduct:—"I hope I shall not be found to have the troubled fountain of a corrupt heart, in a depraved habit of taking rewards to prevent justice; however I may be frail, and partake of the abuses of the times."—See Bacon's affecting letter to the king, in his works, vol. ii, p. 589.

* *History of his own Time*, vol. i, p. 29.

their own feather" that his truly liberal and philosophical discourse contains both "false and dangerous" doctrines. Far different, however, will be its reception at the hands of honest, intelligent and enlightened inquirers after truth and true wisdom; and, that this is greatly the reverse of a vain conjecture, there already exists abundant and gratifying evidence in the document which procured the Doctor's assent to a requisition, that the principles advocated in his "introductory address" might be disseminated in a convenient publication. After "tendering their best acknowledgments" to the lecturer in a special communication through the secretary, the committee of the Chertsey Institution prefer their request, accompanied with these observations:—"From the many topics of local interest, you so happily introduced; from the successful way in which you demonstrated the great benefits to be derived from Literary and Scientific Institutions: and the good counsel you gave us as to the government of our own, the committee feel it would be doing important service to their cause, if you would permit them the pleasure of printing and publishing your Lecture, being desirous to perpetuate the memorable occasion which produced it; also to enable those of their friends who were unavoidably absent, to enjoy the same gratification in reading it as they experienced on its delivery: they feel convinced that its circulation is calculated to do essential good, to convert by its arguments the disaffected, to support the wavering, and to encourage the promoters and members of our Institution to persevere in their good work:" and sincerely do we offer our most devout aspirations for the prosperity of this and all such Institutions as rest their foundations on the sublime truths of Science harmoniously and indissolubly co-operating with the divine precepts of Revelation.

Having opened his discourse with some kind and candid remarks, Dr. Jones proceeds to expatiate, with a fervid eloquence, on the increasing desire for knowledge which gives its bright character to the present age. On all sides, he says, we hear a cry for knowledge: the universities widen their orb of usefulness, and yield to the mental pressure; men of rank, whose easy fortune might entitle them to the choice of hereditary indolence, are now zealous and foremost in pursuit of scientific honours: they engage in the laborious drudgeries as well as the lighter gaieties of literature: the merchant and the tradesman, leaving the hitherto omnipotent allurements of the ledger, now attend the literary and scientific lecture: the spread and sway of cottage learning now enters the humble habitations of the poor: an ardent, unquenchable thirst for knowledge, pervading all ranks, now reaches to all topics of inquiry. Unfortunately, however, there is much alloy in the aliment supplied, in the intellectual pabulum offered, to this urgent and devouring appetite. Many who pander to the unsuspecting innocence of youth and ignorance, either in the open avowal or in the insidious tale, would fain prove that truth is error, that religion is a cheat and delusion. Therefore it is, that the generous Vicar of Bedfont, as a minister of the gospel, comes forward in the warfare to protect the helpless. This he resolves, and this he courageously avows, that the enemy of our faith shall not have the advantage. Christianity does not forbid or deter its ministers from engaging in any cause of public usefulness: it prohibits no attainment, quenches no talent which, in its lawful exercise, may bring glory to the Creator and benefit to man: never will he consent to leave the mighty armour of literature in the sole possession, to the base distortions and ignorant pollutions, of the unbeliever. This is evident, he concludes, that the mighty mind of a free nation is not to be controlled; it may be encouraged; it may be sanctified; but it cannot be bent to bondage. Say what we will and do what we please, the impetus after knowledge will gather strength. Resist it; deride it; and you have a giant to encounter. On the contrary, meet its wants; graciously administer to its requirements and ambitions; prove that you are generously, ardently, unsuspiciously intent upon its growth and welfare; and the fierce passions shall then be tamed and hallowed; the stubborn proud temper shall yield to your intellect, your sympathy, and your mercy.

To the question, "do your institutions effect this mighty conquest?" the doctor's reply comes in the spirit of the warmest and purest benevolence. Many there be who are blind, though basking in the sun's ray. Shew me a man, he exclaims, in a palace or a cottage, who prizes and cultivates the intellects which God has given him, who is gratefully alive to the precious gift of Mind, with all its privileges and responsibilities, and you shew me a man surely nearer to the great source of all wisdom and knowledge, nearer to the Deity himself, more active in the duties assigned him, than is the fool who scorneth knowledge, who merely eats and drinks, thinks and hopes, and dies like the beast that perishes. Certain it is, and bitterly to be lamented, that talents and attainments are often perverted; but, this too is equally certain, that ignorance is sin and desolation. Certain it is, that education marks out the great difference among men; and this also is too certain, that ignorance has its bigots as well as wisdom and religion. Let the bigots of ignorance cleave to their narrow and gloomy notions: we advocate, encourage and espouse scientific, moral and religious enlightenment: we say, with kind and honest intentions, leave not a parish in this noble empire without a school conducted by a competent master: let every school be supported—not by casual and uncertain bounty—but by the State itself, not superseding individual munificence, but aiding and perfecting its exercise. Let elementary knowledge be as cheap, cheering, and needful as the light of the sun: nothing troublesome or dangerous is to be apprehended from the educated man, brought up in the fear of God: no, no; it is the European savage with a seared conscience, with a perverted and contracted mind, with a cold and cruel heart; it is he who tramples upon divine and human laws; it is he who makes a mock at sin and scoffs at knowledge; he it is who, being a savage above all others, is to be dreaded as a moral monster. But, it may be asked, in the absence of such schools, where must we look for assistance and encouragement? In reply, the doctor boldly answers—to the institutions which are rising and thriving all around us. Through their agency, we may not be able to remedy the great defect of a National System of Education: we may not be able to instruct the child; but we may instruct the parent. We may lead that parent to a knowledge of the wonders and mercies of God's creation; we may simplify and unfold to him the treasures of learning; we may lead him to love the pure, the good, the beautiful, the useful in literature and science; and, we may depend upon it, the lesson will not be forgotten. The fire-side of the cottager will then be a witness to many a truth heard at our institutions, and the children of the cottager will learn from their parent to respect knowledge, to prize and pursue its blessings.

Becoming animated with the inspiration of his glorious subject, the lecturer exclaims—shew me a period in the history of our country, where there ever was as now such an universal, indomitable thirst for knowledge. If that cannot be shewn, all reasoning from the past is idle and gratuitous. It matters not what the timid may fear or the selfish prognosticate: the stream has burst with gushing, fearful power, from countless sources. It spreads and gathers strength. Will ye guide it into safe channels; or will ye, in lofty disdain and lonely magnificence, suffer it to waste the land? Will ye, as educated and influential men, take the lead in this outburst of intellect, or follow in the tracks of its desolation? It has come to this, join in the excitement or be left alone: unite religion with instruction: teach men to be loyal subjects, true christians, as well as free inquirers after truth. Let the duties and charities of life gather beauty from our Institutions; let each of these be a sacred spot of neutrality in a land of strife and turmoil, where all jealousies, all animosities may be hushed and banished, where friendships and kind offices between similar societies may be cultivated. Let all this be done courteously and effectually, and the result will prove every way advantageous to towns, and counties, and our common country.

Dr. Jones next engages in a lively description of the numerous and magnificent achievements already accomplished in Science and the Arts, by the exercise of enlightened intellect; and he ingeniously converts these into encouragements to hope that still grander discoveries will be completed in due time, and with adaptations even more beneficial to man, in the discipline of his faculties as a responsible being well assured of immortality. His consummating inquiry is—how far the Literary and Scientific Institutions are favourable to religion? In his opinion, formed from observation, and confirmed by experience, we may make them nests of infidelity or schools for the diffusion of genuine piety; but, with a fatherly solicitude, he tenders this excellent advice to his hearers—be it your wise and noble choice to select the latter. What then, he inquires, is Religion? Is it a cold and abstract creed which demands our assent, for the sake of mere formality? Or, is it that which urges and hallows all our inquiries and our labours? It is a Revelation from God, himself the source of all knowledge. Whatever path we pursue, whether we stretch our thoughts to the material universe, or penetrate into the wondrous mechanism of our own physical constitution, or follow out the creations of mind, we trace equally the power and wisdom of the Creator. All rays of good converge to the same centre: all forms of mental and moral and religious improvement are substantially and ultimately one. When ignorance pervades and shadows a land, all this is designed to promote wise and gracious ends: on the other hand, when the torch of knowledge is lighted, it blazes at God's bidding, and is meant to accomplish the purposes of His divine will. As such, let us cherish and follow and revere it. Literature and Science are mere humble agencies, to perfect us in the love of truth and righteousness. It is manifest, from the experience of all ages, that there may be science, there may be eloquence, there may be talent and knowledge, without a single care or question as to man's immortality. In one word, there may be no religious wisdom. What is this wisdom? It is that which, studying and promoting the moral, mental and civil happiness of man here, forgets not that this state of being will pass away, and be succeeded by a state without end, eternal. What is Christianity? It is a Revelation from Heaven, to reconcile God to man, man to his fellow creatures, man to real happiness. Can that be opposed to mental energy? Can that be inimical to the pure expanding inquisitive ambition of an immortal mind? Can the heathenish infidel cherish in his cold withering, blighting dogmas, a higher nobler love of science and literature, an intenser and sincerer wish to spread their benedictions and their blessings, than he who goes forth "armed with the shield of faith and the helmet of salvation"? It is high time to disenchant the infidel of his insulting boast, that the friends to Religion are foes to Knowledge. It is high time to show and to prove, that Christianity is the Queen of Knowledge, the nursing mother of all that is lovely and great, of all that is good and useful.

We cordially and perfectly concur with Dr. Jones in his principles as exemplified in the preceding notes selected from his eloquent and instructive lecture; and we maintain, for a clear and consolatory induction fully demonstrated, that man is endowed by the Creator with an innate religious as well as intellectual nature, and that no System of Education can ever be extensively successful or permanently beneficial to society, that does not absolutely enjoin, as an eternal obligation, the co-equal and co-relative culture of man's religious and intellectual powers.

The Stomach in its Morbid States; being a Practical Inquiry into the Nature and Treatment of Diseases of that Organ, and into the influence they exercise upon the origin, progress, and termination of Diseases of the Liver, Heart, Lungs, and Brain; by Langston Parker, Member of the Royal College of Surgeons, and Fellow of the Royal Medical and Chirurgical Society of London; 8vo, Barlow, Birmingham, and Longman, London, 1838, pp. xx, 304.

Mr. PARKER's is a comprehensive and elaborate medical treatise; and consequently, it embraces subjects far above the sphere of a journal devoted to general science and literature. Since, however, his method is so distinct and his style so perspicuous as to be intelligible for the most part by unmedical readers, we may venture to place before the Profession a mere view of his arrangement, and before the Public such an illustration of his practical principles and their applications as will render their propriety and usefulness apparent to ordinary experience.

By the author's intention, his work is materially different from all those which have preceded it, on the same subject. It is neither occupied chiefly with the consideration of pathological changes, nor is it limited to one class of primary morbid states. To his mind, organic disease itself has never appeared so essential as its precursory conditions; for these, by their long continuance, tend ultimately to produce incurable affections, either in the organs where they are seated, or in remote parts by sympathy; and, on this account, he wishes to represent these conditions as requiring the greatest attention.

Mr. Parker refers the primary Morbid Conditions of the Stomach to three distinct classes: *first*, its congestive and inflammatory states; *second*, the affections of its sensibility, both organic and animal; and *third*, the disorders of its secretions. He gives a valuable preliminary analytical table, for the purpose of affording a condensed outline of his observations; and, in the selection of its elements, he has displayed much tact and judgment. Thus we conveniently find—that, under thirteen separate heads, he treats of as many propositions with remarkable clearness and force of demonstration. We would recommend the doctors, both the idle and the studious, to peruse this table as an exercise which may inspire them with a resolution to cultivate a more intimate acquaintance with Mr. Parker's gastropathy and his expedients for rescuing sufferers from the tortures of its inexorable dominion.

For the benefit of those persons in whom the stomach solicits attention, through the instrumentality of occasional or periodical excitement, we will now select some notes from Mr. Parker's very instructive and judicious remarks on the principal remedies employed in diseases of the digestive organs.

General bleeding in affections of the stomach, even of the inflammatory kind, he holds to be inadmissible, except perhaps in a very severe acute form of the disease, where a single bleeding might be employed at the commencement, previously to local depletions. On the contrary, local bleeding is one of the most efficacious remedies that can be employed in such cases: it should not precede the use of other means; but, when these seem to produce but little benefit, or a mere temporary amendment, then a moderate bleeding from the region of the stomach should be employed. This resource should be adopted when fulness of blood in the mucous coat of that organ is suspected: even in extreme emaciation from long continued illness, two or three or four leeches will sometimes alleviate symptoms which would resist every other application. In acute inflammation, leeches may be applied freely to the number of fifteen or twenty, at each time. When, however, inflammation of the stomach arises during the progress of an affection of the heart or liver, the depletion must be more guardedly used, because the constitution has already been enfeebled or rendered irritable. When there is confirmed chronic inflammation of the stomach, more advantage will be derived from the daily application of six or eight leeches, than from a larger bleeding. In such cases, the quantity of blood taken at one time, is of extreme importance. Unpleasant nervous symptoms often accompany inflammatory disorders of the stomach, and a slight inflammation sometimes produces a disturbance in which the nervous symptoms predominate: hence, local depletions, although of vast utility, should be applied with much caution; for, when large, they are frequently succeeded by an aggravation of the concomitant nervous feelings. Many forms of gastric inflammation are strictly periodical: in others, the disease's prominent features, as pain and distension of the stomach, heat of the skin, and quickened pulse, are only present after meals. It is during these accessions, that local bleedings should be employed: at these periods, it is more useful, both as a palliative and curative remedy, than when resorted to in the intervals of the paroxysms. We have seen invalids giving a lively description of the relief they had obtained from treating the parts over the stomach with applications of very hot water, mustard-poultices, warm plasters, and especially of cupping-glasses with or without bleeding.

Constipation is a prominent and distressing symptom in many forms of stomach-disease: in such cases, although aperients are required and prove of the greatest utility when properly selected, yet they often increase the patient's sufferings, when violent and not guarded with sedatives. Mr. Parker prefers those which consist of blue pill with aloes or rhubarb, combined with galbanum, the extracts of hops, lettuce or henbane, or the salts of morphia. He thinks calomel, with the compound aloëtic pill and a sedative, is useful in some cases; but the mercurial should rarely exceed one grain, for a dose. These remedies, accompanied with solutions of the neutral salts in bitter infusions with hydrocyanic acid, form the best aperients: they operate freely without pain or uneasiness, and generally afford very marked relief. Occasional lavements are said to be good, by sparing the stomach the excitement of medicines.

Sedatives constitute an important class of remedies in affections of the mucous membrane of the stomach, because the parts then have their sensibility in a state of exaltation. It is from a knowledge of this circumstance, that Mr. P. never prescribes an aperient or other medicine, in gastric diseases, without combining it with muriate of morphia, hydrocyanic acid, or extract of henbane. When applied externally to the epigastric region, sedatives are often found of great service in promoting a cure, and in mitigating the pain of incurable cases. Mr. P. recommends, for this purpose, a piece of flannel soaked in a strong solution of opium and worn over the stomach: or, as more efficacious, a solution of three drachms of the extract of belladonna in seven ounces of water to be used as a tepid fomentation: or, a poultice of the leaves of this plant, or of henbane, hop or poppy. These applications prove highly serviceable in all diseases of the stomach attended with pain.

During digestion, the gastric juice contains free hydrochloric and acetic acids, in proportion to the stimulating qualities of the food. Many disorders of the stomach are accompanied with an excess of acid, in its secretions; and, in some instances, intense acidity forms one of the most prominent and distressing features of the complaint. In such cases, it becomes necessasy to administer remedies to neutralize this excess of acid, as well as to adopt others for preventing the disposition to its recurrence. Mr. Parker specifies the chalk-mixture, with large doses of hydroyanic acid, as being here particularly beneficial, especially when there also is intestinal irritation. At other times, he employs magnesia or soda combined with morphia, or the subnitrate of bismuth. When excessive acidity is connected with great bodily weakness and debility of the constitution, he exhibits the carbonate of iron with myrrh and rhubarb, as the most efficacious remedies.

Tonics require to be administered with discernment and caution in disturbances of the digestive organs; but, at the same time, medicines of this kind do much good in very many stomach affections. Mr. Parker divides these into four classes. *One*, the primitive morbid states of the stomach, resembling inflammation, which are aggravated by a lowering treatment, or by aperients. *Two*, the states of disease, succeeding to inflammation, which have been benefited by a lowering treatment at the commencement, but where this no longer affords relief, or adds severity to the symptoms. *Three*, the various morbid degrees of the sensibility of the stomach: these are occasionally accompanied by intermittent neuralgic affections in other parts of the body. *Four*, the states of general debility, and many local symptoms, as pain, sickness and vomiting, which attend confirmed organic diseases of the stomach. At the period when the complaint ceases to be inflammatory and passes into one of debility or of excessive sensibility, then is the time when the lowering plan should be abandoned, and a course of tonics with a generous diet substituted.

Thus, have we endeavoured to *popularize* some of the practical precepts propounded in Mr. Parker's volume; but we have not engaged in this attempt, with any view to encourage their popular applications; we desired exclusively to shew that he has completed a sensible and instructive work, in all respects deserving to be highly appreciated and patronized by the medical profession.

The Principles of Gothic Ecclesiastical Architecture, elucidated by question and answer; by Matthew Holbeche Bloxam; the *third* edition, with one hundred graphic illustrations; 12mo, Combe, Leicester; Tilt, London; Parker, Oxford; 1838; pp. 130.

Mr. Bloxam's *Principles* are beautifully and faithfully elucidated by the combined effect of his figures and clear though concise descriptions. In his *Introduction*, he traces the Gothic or English Architecture from its origin in the age of our Celtic ancestors the first possessors of the British soil, through its varied progress, down to its decline at the reformation. This preliminary sketch abounds with observations well fitted to engage the attention of students and others whose peculiar taste inclines them to the investigation of historical and ecclesiastical archæology. It is admirably completed in his *concluding chapter* on the internal arrangement and decorations of a church: his closing statements constitute a very melancholy but instructive picture. "Our churches," he says, "were fated in 1643 to undergo no slight scenes of spoliation and desecration. By an order of the House of Commons, the churchwardens of every parish were required to take away and demolish every altar or table of stone within their respective churches, and to remove the Communion-table from the east end of the church, and place the same in some other part of the body of the church, the rails of the Communion-table having been previously ordered to be taken away, and the chancels levelled. Under colour of these ordinances," Mr. B. adds, "the beauty of the cathedrals and churches was injured to an extent hardly credible; the monuments of the dead were defaced in the iconoclastic fury which then raged; and the havoc made of church ornaments, and the destruction of the fine painted glass with which most church windows then abounded, may in some degree be estimated from the account given by the Parliamentary Commissioner for demolishing the superstitious pictures and ornaments of churches within the county of Suffolk, who kept a journal of the particulars of his transactions. This was not enough: our sacred edifices were polluted and profaned in the most irreverent and disgraceful manner; and, with the exception of the destruction which took place on the dissolution of the monastic establishments in the previous century, more devastation was occasioned at this time, 1643, by the party hostile to the Established Church, than had ever been committed since the ravages of the ancient Danish invaders;" and all this was perpetrated under the impulse of a spurious piety, which displayed its spirit in the destruction of property, the wealth and the strength of a nation!

There is great distinctness, both of method and detail, in Mr. Bloxam's exposition of his *principles*. He opens this with a definition of Gothic architecture, and then treats successively of its origin and different styles or orders, including an account of the several kinds of arches, with a specification of the principal and subordinate parts of a church. Seven distinct styles enter into his division of the Gothic architecture, and he defines "the periods in which they flourished." I. The *Saxon* prevailed from the mission of Augustine, at the close of the *sixth*, to the end of the *tenth* century. II. The *Norman* prevailed generally throughout the *eleventh* and *twelfth* centuries. III. The *Semi-Norman* or *Transition* prevailed from A. D. 1135 to the commencement of the *thirteenth* century. IV. The *Early English* was the prevailing style of the *thirteenth* century. V. The *Decorated English* was the general style of the *fourteenth* century. VI. The *Perpendicular English* prevailed during the *fifteenth* and early part of the *sixteenth* century. VII. The *Debased English* formed the usual style of the *sixteenth* and early part of the *seventeenth* century. The characteristic difference in these styles depends chiefly on the form of the arches, which are simicircular, pointed and mixed; the size of the windows, and the manner in which they are subdivided by transoms, mullions and tracery; and in certain ornaments and mouldings peculiar to each style, and which are seldom to be met with in any other.

Let this brief notice suffice to exhibit the scope and extent of Mr. Bloxam's undertaking. In its fulfilment, his object stands well intitled to the highest commendation. On the pages of his *Principles*, his architectural knowledge appears conspicuous, intimate and extensive. His pictorial illustrations deserve much praise for their beauty and usefulness. His book should have a place in the library of every clergyman and church-warden throughout the kingdom. Most of the laity ought to be acquainted with the *principles of Gothic ecclesiastical architecture:* were but one copy of this excellent little work deposited in every vestry, so as to be accessible to the parishioners, its possession would prove the powerful means of preventing churches from being disfigured by those detestable misrepairs, which bear eternal testimony against the illiberality of the Utilitarian Spirit, and its parsimonious bigotry.

Le Bijou Littéraire; ou Anecdotes Historiques, et Extraits Moraux des meilleurs prosateurs et poètes Français; par C. Victor Martin; 8vo. à Londres, 1837: pp. xvi, 300.

The author of this elegant little work, M. Martin, is already well known to us by his admirable Treatise on the French verbs, we were therefore predisposed in favour of *le Bijou Littéraire,* having in the "Treatise" had ample proof of the talent of the author.

This work of M. Martin, we can most warmly recommend, not only to the student in the French tongue, to whom it will offer a variety of subject and style not to be found in any other elementary work of its kind, but even to the proficient in the French language, *le Bijou Littéraire* presents much that is interesting and profitable. The subjects, though varied, are remarkable for their elegance, and display an admirable choice in their selection. Some of the latter pieces cannot be excelled, they are full of noble and sublime truths.

The Poetical Extracts are from the first French writers, both ancient and modern. We hope that every one will procure the *Bijou Littéraire,* as nothing tends to humanize the mind and break down national prejudices so much as the study of those enlarged ideas and sentiments of goodness and beauty for which the writings of great men in every nation are celebrated.

PROCEEDINGS OF SOCIETIES.

BIRMINGHAM LITERARY AND PLILOSOPHICAL INSTITUTION.

The present session of this Institution, commenced in November last, with a lecture by Mr. Corrie on Knowledge in connection with Civilization, a subject possessing great interest. Some valuable communications were made relative to Meteorolites, to the phenomena of the Aurora Borealis; and to Saurian remains, by Dr. O. Ward. Dr. Blakiston delivered a lecture on the Diffusion of Scientific Knowledge in large towns, which we are happy in being enabled to present to our readers, in the present number. The same gentleman is now engaged in giving a course of ten lectures on Chemistry, an abstract of which will probably appear in our journal. Mr. Ick the able and talented Curator of the Institution, intends resuming his illustrations of Botany in the spring.

Such Philosophical Institutions as this at Birmingham, merit the greatest encouragement; for, at the same time that they develope and concentrate native talent, they afford to the community at small cost, the advantages arising from united scientific research. Unless the labours of science are appreciated and in some degree rewarded, they will necessarily cease to be so actively exerted. We could have wished to have seen the valuable museum of Mr. Weaver (lately on sale) in the possession of this Institution, and we cannot but congratulate the present proprietors of the Collection, on their spirit and liberality in securing a treasure so extensive and valuable.

Birmingham has greatly improved, of late years; and, from its central situation as regards the great lines of communication through the country, it will probably, ere long, rank as the second capital of the kingdom. As it still further increases in mercantile prosperity, we hope that all useful learning will become widely diffused through its population. Indeed, there can be no doubt but this will be the happy result. Society generally is proceeding every day to acknowledge more and more the necessity of cultivating the intellectual faculties, rather than the mere propensity to acquire gain and enjoy pleasure, or the indulgence of the lowest feelings. The shades of Ignorance are fast dispersing before the torch of enlightened Reason; but we would ever maintain, that this torch should burn with a pure flame, and be held with a steady hand, not cast loose as a fire-brand which may dazzle or blind rather than illuminate. Knowledge may give power, but the possession of power alone does not necessarily ensure happiness. The true philanthropist, in giving the one, will endeavour by the best means in his power to promote the principles by which the other shall be disseminated.

WOLVERHAMPTON LITERARY AND SCIENTIFIC SOCIETY.

This Society has been established about two years, and it already includes amongst its members many of the most talented men of the town and neighbourhood. Since September last, the following papers have been read before the institution. On the progress and tendency of Philosophy, by Mr. Kettle. On Meteorology, or the phenomena of the earth's atmosphere, by the Rev. S. Hunter. On the organic remains of the Lias, and also on the Invertebrated Animals as an introduction to the study of Conchology by Mr. Jukes. On situation, habits and social employments as affecting health and longevity by Dr. Bell. On the different gases of the atmosphere, by M. de Londe. On the learning and science of Ancient Nations, by the Rev. Dr. Oliver, and on Phrenology by Mr. Coleman. Many of these communications possessed great merit, and led to both agreeable and instructive discussions. It is the anxious wish of the members of this Society, to establish a Museum and Library, and we trust they will meet with such support as may enable them to carry their laudable design into effect, so as to perpetuate the existence and the influence of their institution.

LEICESTER LITERARY AND PHILOSOPHICAL INSTITUTION.

At a recent meeting of this Institution, Mr. Berry read a paper on the manners of the Romans, in which he gave a general view of the habits of this extraordinary people, during different epochs of their history; and he described with great ability and power, the occupations of a day in the Augustine age. Dr. Shaw made a communication on Statistics; and we understand he intends to treat at some length on this intricate subject, particularly in its local and vital branches.

At an early meeting of the Institution, a paper will be read on the Icelandic *Voluspa,* which comprises the ancient system of Scandinavian Mythology, and constitutes part of the celebrated Edda, or Runic Philosophy compiled by Sæmund, surnamed the *learned,* about the middle of the eleventh century.

MISCELLANEOUS COMMUNICATIONS.

Electrical Society.—At a late meeting of this Society, Mr. Crosse read a paper giving an account of his electrical experiments, in which a certain insect made its unexpected appearance. He trusted that the members would not imagine that because he had delayed so long furnishing them with the account, such delay had been occasioned by any desire of withholding what he had to state, from the society in particular, or the public at large. He was delighted to find that at last, late, though not less called for, an institution had been formed for the purpose of explaining and making public those mysteries which hitherto, under a variety of names, and ascribed to all causes but the true one, have eluded the grasp of men of research, and served to perplex, perhaps, rather than to afford sufficient data to theorise upon. Much has been done in the course of a few years, and this affords the strongest reason for believing that vastly more remains to be done. Electricity is no longer the confined science it was supposed to be, making its appearance only from the friction of glass or wax, employed in childish purposes, serving as a trick for the school-boy or a nostrum for the quack; but it is even now, though in its infancy, proved to be most intimately connected with all operations in chemistry, with magnetism, with light and caloric, apparently a property belonging to all matter, perhaps ranging thro' space, from sun to sun, from planet to planet, and not improbably the secondary cause of every change in the animal, the vegetable, the mineral, and the gaseous systems. To determine these probabilities, as far as human faculties can determine, and to find out to what useful purposes electricity might be applied, Mr. Crosse conceived to be the object of the Electrical

Society, and he should at all times be ready and willing, as a member, to contribute his quota of information to its support.

In a former report of the proceedings of the Electrical Society of a translation of a paper read before the Academie des Sciences at Paris, describing "Mr. Crosse's insect," and commenting upon "its creation," it was stated that Mr. Crosse had never manifested the slightest approach to the blasphemous arrogance of the creative power, and a hope was expressed to see ere long a full account from Mr. Crosse, calculated to remove such impressions, and place his wonderful experiments in their proper light. The truth of this assertion is confirmed and their hopes realised by the present full and explicit account; but let Mr. Crosse speak to his justification in his own words:—"It is most unpleasing to my feelings to glance at myself as an individual, but I have met with so much virulence and abuse—so much calumny and misrepresentation, in consequence of the experiments which I am about to detail, and which it seems in this nineteenth century a crime to have made—that I must state, not for the sake of myself (for I utterly scorn all such misrepresentations), but for the sake of truth and the science which I follow that I am neither an 'Athiest' nor a 'Materialist,' nor a 'self-imagined creator,' but a humble and lowly reverencer of that Great Being whose laws my accusers seem wholly to have lost sight of. More than this, it is my conviction that science is only valuable as means to a greater end. I attach no particular value to any experiment that I have made: my feelings and habits are much more of a retiring than an obtruding character, and I care not if what I have done be entirely overthrown, if truth be elicited." The true investigator of science, the persevering seeker for truth, and the unassuming relater of the results of a series of experiments for the advancement of science only, stand forth in the following plain and minute accounts of the experiments in question. In endeavouring to form artificial minerals by a long-continued electric action on fluids, holding in solution such substances as were necessary for the purpose, every variety of contrivance had been employed by Mr. Crosse which might enable him to keep up a never-failing electrical current of greater or less intensity, or quantity, or both, as the case required, and which expose the solutions used to the electric action, in the manner best calculated to effect the object in view. Amongst other contrivances, a wooden frame was constructed of about two feet in height, consisting of four legs proceeding from a shelve at the bottom, supporting another at the top, and containing a third in the middle, each of these shelves about seven inches square. The upper one was pierced with an aperture, in which was fixed a funnel of Wedgwood ware; within this rested a quart bason on a circular piece of mahogany placed within the funnel. When this bason was filled with a fluid a strip of flannel wetted with the same was suspended over the edge of the bason and inside the funnel, and, acting as a syphon, conveyed the fluid out of the bason through the funnel in successive drops. The middle shelf of the frame was likewise pierced with an aperture, in which was fixed a smaller funnel of glass, supporting a piece of somewhat porous red oxide of iron, from Vesuvius, immediately under the dropping of the upper funnel. This stone was kept constantly electrified by means of two platina wires on either side of it, connected with the poles of a voltaic battery of nineteen pairs of five inch zinc and copper single plates, in two porcelain troughs, the cells of which were filled at first with water, and 1-500th of hydrochloric acid, but afterwards with water alone. (In all the subsequent experiments relative to these insects the cells of the batteries employed were filled with nothing but common water.) The lower shelf merely supported a wide-mouthed bottle, to receive the drops as they fell from the second funnel, to be poured back again into the basin above, without disturbing the position of the stone. The volcanic substance was selected by mere chance, in consequence of its partial porosity, and Mr. Crosse did not believe it had the slightest effect in the production of the insects. The fluid with which the bason was filled was made as follows:—A piece of black flint having been exposed to a red heat, and quenched in water, to make it friable, was reduced to powder, two ounces of which were intimately mixed with six ounces of carbonate of potassa, and the compound was exposed to a strong heat for fifteen minutes in a black lead crucible, in an air furnace. In this fused state it was poured on an iron plate, reduced to powder, whilst still warm, and boiling water poured upon it; it was, then kept boiling for some minutes in a sand bath. The greater part of the soluble glass thus formed was taken up by the water, together with a portion of alumina from the crucible (a silver one would have been used, but Mr. Crosse had none sufficiently large). To a portion of the silicate of potassa thus formed boiling water was added, to dilute it, and then slowly to supersaturation, hydrochloric acid. This fluid was subjected to a long-continued electric action, through the intervention of a porous stone, in order that, if possible, crystals of silica might be formed at one of the poles of the battery; but Mr. Crosse failed in accomplishing this by these means. On the fourteenth morning from the commencement of the experiment, were observed, through a lens, a few small whitish excrescences or nipples, projecting from about the middle of the electrified stone, and nearly under the dropping of the fluid above. On the 18th day these projections were enlarged, and seven or eight filaments, each of them larger than the excrescence from which it grew, made their appearance on each of the nipples. On the 22d day these appearances were more elevated and distinct; and on the 26th day each figure assumed the form of a perfect insect, standing erect on a few bristles which formed its tail. Until this period, Mr. Crosse had had no notion that these appearances were any other than an incipient mineral formation; but it was not until the 28th day, when he plainly perceived the little creatures move their legs, that he felt any surprise; and when this occurred, as may be easily imagined, he was not a little astonished. Mr. Cross endeavoured to detach, with the point of a needle, one or two of them from their position on the stone; but they immediately died, and he was obliged to wait patiently a few days longer, when they separated themselves from the stone and moved about at pleasure, although they had been for some time after their birth apparently averse to motion. In the course of a few weeks, about a hundred of them made their appearance on the stone. At first, each of them fixed itself, for a considerable time, in one spot, appearing to feed by suction; but, when a ray of light from the sun was directed upon it, it seemed disturbed, and removed itself to the shaded part of the stone. Out of about a hundred insects not above five or six were born on the south side of the stone. On being examined with a microscope, the smaller ones appeared to have only six legs, but the larger ones eight.

Mr. Crosse states that “ it would be superfluous to attempt a description of these insects, when so able a one has been transmitted from Paris. It seems they are of the genus acarus, but of a species not hitherto observed." They have been seen and examined by many scientific men and eminent physiologists, who all coincide with M. Turpin and the members of the Academie des Sciences as to their genus and species. Mr. Crosse has never ventured an opinion as to the cause of their birth. He conjectured that they arose from ova deposited by insects floating in the air, and that they might possibly be hatched by the electric action; but he could not imagine that an ovum could shoot out filaments, and that these filaments would become bristles; and he could not, on the closest examination, detect any remains of a shell. Moreover, we have no right to assume that electric action is necessary to vitality, until such fact shall have been most distinctly proved. Mr. Crosse next imagined their origin from the water, and closely examined several hundred vessels in the same room, filled with the same water as that which held in solution the silicate of potassa, but could perceive no trace of an insect of that description. He then examined the crevices and dusty parts of the room, with no better success. In the course of some months, these insects so increased that, when they were strong enough to leave their moistened birth-place, they issued out in different directions; Mr. Crosse supposed in quest of food; but they generally huddled together under a card or piece of paper in their neighbourhood, as if to avoid light or disturbance.

In the course of experiments upon other matters a glass basin was filled with a concentrated solution of silicate of potassa without acid, in the middle of which was placed a piece of brick, consisting chiefly of silica, connected at each end with the poles of a voltaic battery of sixty-three pairs of plates, each about two inches square. After many months' action, silica in a gelatinous state formed on the bottom of the brick, and as the solution evaporated it was replaced by additions, so that the outside of the glass basin being constantly wet by repeated overflowings was of course constantly electrified. On this outside, as well as on the edge of the fluid within, the insects were similarly produced. The apparatus was covered with them, they hid themselves wherever they could find shelter, many were plainly perceptible to the naked eye as they nimbly crawled from one spot to another. On examining the table with a lens, no such excrescence as that which marks their incipient state could be perceived. Other experiments were also in progress at this time with different-sized batteries. On a clay slate suspended in a glass cylinder by two platina wires, in a similar solution to the foregoing, similar excrescences and growth to perfect insects were observed. Between the poles of one battery were interposed a series of seven glass cylinders, filled with the following concentrated solutions:—1, Nitrate of copper; 2, subcarbonate of potassa; 3, sulphate of copper; 4, green sulphate of iron; 5, sulphate of zinc; 6, water acidified with a minute portion of hydrochloric acid; 7, water poured on powdered metallic arsenic, resting on a copper cup connected with the positive pole of the battery. All these cylinders were electrically united together by arcs of sheet copper, so that the same electric current passed through the whole of them. After many months' action, and consequent formation of certain crystalline matters, similar excrescences appeared at the edge of the fluid in every one of the cylinders excepting the two which contained the carbonate of potassa and the metallic arsenic, and in due time a host of insects made their appearance. In another experiment, a bent iron wire, one-fifth of an inch in diameter, in the form of an inverted syphon, was plunged some inches into a concentrated solution of silicate of potassa, and connected with the positive pole, whilst a small coil of fine silver wire joined it with the negative. Similar insects were formed on the gelatinous silica on both wires, also on that part of the wires free from the silicious deposits, about half an inch below the surtace of the fluid. Some of them were formed on the inverted part of the syphon-shaped wire, yet they did repeatedly contrive to arrive at the surface, and to extricate themselves from the fluid. The room in which the three last batteries were acting was kept almost constantly darkened.

Other experiments were described. The concluding remarks were to the following purport:—Mr. Crosse had not observed a formation of the insect excepting on a moist and electrified surface, or under an electrified fluid. By this he did not mean to assert that electricity had anything to do with their birth, as he had not made a sufficient number of experiments to prove or disprove it. These insects do not appear to have originated from others similar to themselves. He believed they live for many weeks; occasionally he had found them dead in groups, apparently from want of food. It had often been suggested to him to repeat the experiment without the electric agency; but this he considered would be by no means satisfactory, let the event be what it may. It is well-known that saline matters are easily chrystallised without being subjected to the electric action; but it by no means follows that, because artificial electricity is not applied, such chrystals are formed without the electric influence. Mr. Crosse has made so many experiments on electrical chrystalization, that he is firmly persuaded that electric attraction is the cause of the formation of every chrystal, whether artificial electricity be applied or not. He states, however, that he is well aware of the difficulty of getting at the truth of these matters, and of separating cause and effect. With regard to the productions of insects in paste, vinegar, &c., and after blight in fruit trees, he observes—does not a chemical change take place in the former, as also in the sap of the tree, previous to the appearance of the insects, and is or is not every chemical change produced by electric agency? In making these observations he sought to mislead no one. The book of Nature is opened wide to our view by the Almighty power, and we must endeavour, as far as our feeble faculties will permit, to make a good use of it, always remembering that, however the timid may shrink from investigation, the more completely the secrets of Nature are laid bare, the more effectually will the power of that Great Being be manifested who seems to have ordained that "order is Heaven's first law."

Punishment of Death.—Mr. Livingston, the illustrious American legislator, on being empowered by the House of Representatives of the State of Louisiana to prepare a Penal Code, in his Report to the Legislative Assembly, thus speaks of the punishment of death:—I approached the inquiry into the nature and effect of this punishment with the awe becoming a man who felt most deeply his liability to err, and the necessity of forming a correct opinion on a point so interesting to the justice of the country—the life of its citizens and the character of its laws. I strove to clear my understanding from all prejudices which education or early impressions might have created, and to produce a frame of mind fitted for the investigation of truth, and the impartial examination of the arguments on this great question After the best use that my faculties would enable me to make of all the sources of knowledge on this subject within my reach, after long reflection, and not until I had canvassed every argument that could suggest itself to my mind, I came to the conclusion that *the punishment of death should find no place in the code* which you have directed me to present.

In coming to a resolution on this solemn subject, we must not forget a principle established on the soundest reason—that, other things being equal, the punishment should be preferred which gives us the means of correcting any false judgment to which passion, indifference, false testimony, or deceiving appearances may have given rise. Error, from these or other causes, is sometimes inevitable. Its operation is instantaneous, and its fatal effects in the punishment of death follow without delay: but time is required for its correction. We retrace our steps with difficulty. It is mortifying to acknowledge that we have been unjust; and, during the time requisite for the discovery of the truth, for its operation on our unwilling minds, for the interposition of that power which alone can stop the execution of the law, its stroke falls, and the innocent victim dies. What would not then the jurors who convicted, the judges who condemned, the mistaken witness who testified to the guilt, what would not the whole community who saw the sufferer's dying agonies, who heard at that moment his fruitless asseverations of innocence, what would they not all give to have yet within their reach the means of repairing the wrongs they had witnessed or inflicted?

Instances of this kind are not unfrequent: many of them are on record. *Several have taken place in our own day; and a very remarkable example, which was given but a few years since in one of the Northern States, shows, in a striking manner, the danger of those punishments which cannot be recalled or compensated, even though the innocence of the sufferer is rendered clear to demonstration.* A few such instances in a century are sufficient to counteract the best effects that could be derived from example. There is no spectacle that takes such hold on the feelings, as that of an innocent man suffering by an unjust sentence. One such example is remembered, when twenty of merited punishment are forgotten. The best passions take part against the laws, and arraign their operation as iniquitous and inhuman.

To see a human being in the full enjoyment of all the faculties of his mind and all the energies of his body—his vital powers attacked by no disease, injured by no accident—the pulse beating high with youth and health—to see him doomed by the cool calculation of his fellow-men to certain destruction, which no courage can repel, no art or persuasion avert—to see a mortal distribute the most awful dispensations of the Deity, usurp his attributes, and fix by his own decree an inevitable limit to that existence which almighty power alone can give, and which its sentence alone should destroy, must give rise to solemn reflections, which the imposing spectacle of a human sacrifice naturally produces, until its frequent recurrence renders the mind insensible to the impression.

ON THE YELLOW COLOUR OF THE LEAVES IN AUTUMN.—It is well known that the green foliage of trees assumes before falling in Autumn, especially after one or more nights of frost, a beautiful citron-yellow colour. This is particularly observed in the Beech, (*Betula alba*), the Pear tree, (*Pyrus communis*), the Apple tree, (*Pyrus Malus*), the Elm, (*Ulmus campes-*

tris), the Ash, *(Fraxinus exculsior)*, and others. The foliage of the Alder, on the contrary, rarely becomes yellow but falls green. That of the Oak becomes not yellow but brown. The yellow foliage afterwards assumes the same brown colour when it is dried after its fall. Various researches have already been made on the yellow colour of the foliage. Macaire Prinsep communicated the result of several experiments on the autumnal coloration of the foliage; and the general conclusion is, that the foliage in Autumn ceases to evolve oxygen, but that it takes this gas from the air, that there is then formed an acid which tinges the foliage at first yellow, then red, and that this acid may be neutralized by an alkali, so that the foliage recovers its yellow colour. Like Clamor Marquart, he regards these colorations as modifications of one and the same colouring matter, which he terms *chromule;* and he says that it is the cause of the ordinary yellow or red colour of the petals. These results, Berzelius represents to be quite incorrect. Foliage once tinged yellow never becomes green under any re-agent; but foliage which has become red resumes a green colour on the addition of potass, because its red colouring matter forms green combinations with its alkali. Leopold Gmelin first directed attention to the difficulty with which the experiments of Macaire Prinsep could lead to precise results. Guided by this observation, Berzelius undertook some researches on the colour of the foliage altered by the agency of the autumnal cold. These he performed chiefly on the citron-yellow foliage of the common Pear tree *(Pyrus communis)* which was put recently and at the moment at which it was collected in a bottle, and completely covered with alcohol of 0.833, with which it was left in contact for forty days. The alcohol acquired a yellow colour; but the foliage was still yellow, though paler than before. The alcohol was decanted and the flask was kept for some time inverted. The foliage then acquired a brown colour, wherever it was in contact with the air, while the sides of the leaves which were in contact with the walls of the vessel, retained their yellow tint. Alcohol was poured at several intervals on the leaves, and each time was coloured yellow. At length the alcohol was made to boil, when it acquired a colour a little yellowish, but it became gelatinous during cooling.

The cause of this gelatinous state is the presence of a fatty matter, peculiar probably to the foliage examined which is obtained colourless after washing with cold alcohol, from new solutions and renewed washings. It possesses the following properties. In the dry state it is of a milky white, its fragments similar to chalk. It becomes soft under pressure; it is inodorous and tasteless. It melts at 73°, and becomes concrete and turbid on cooling. Insoluble in water, it requires 425 parts of cold alcohol to dissolve it. A saturated solution at boiling heat is converted, on cooling, into a transparent jelly like paste. Cold ether dissolves little of it, but more than alcohol. It is insoluble in caustic potass. It passes without change to the dry distillation, if, during the process, air be excluded. The leaves macerated as now described, were now distilled to one-eighth; and there was then deposited on cooling, a granular substance, which presented a species of crystallization. After the separation of this substance, the distillation was continued till nothing was left but the water of the vegetation of the leaves. On this yellow brown liquor was then floating a yellow soft fatty substance, with an appearance identical to that of the grains containing the yellow colouring matter of the foliage. These grains presented to the microscope no trace of crystallization, and they might be drawn by the fingers into a yellow unctuous fat. This is mixed with a small quantity of fat oil which Berzelius could distinguish but not isolate with certainty, and with another substance equally as fat. It could be detached in greater degree from the first substance, by digestion with a weak solution of caustic potass, which saponifies the oil and dissolves only a small quantity of the yellow fat. The yellowish fat acids are precipitated from the alkaline solution by hydrochloric acid, and by redissolving them in very much diluted caustic ammonia (five or six drops of the *aqua ammoniæ* to one ounce of water) and again precipitating them, they are obtained colourless. To deprive it of the last substance, or the solid fatty matter, it is necessary to treat it with cold alcohol, in which it is not soluble. He was, however, never able to obtain it completely free from these two fat substances.

The yellow fat is soluble in alcohol, though in small quantity. In this solution it is not sensibly whitened at the same time as it begins to whiten with water. The alcoholic solution furnishes a precipitate on the addition of water; it then assumes a pale, milky-yellow aspect, with difficulty becomes clear, and also preserves this state after the evaporation of the alcohol. From the alcoholic solution it is deposited by spontaneous evaporation, under the form of a granular crystaline mass. It is copiously dissolved by ether, and it remains, after the evaporation of the solvent, transparent and of a yellow colour. In contact with concentrated sulphuric acid, it becomes brown, is sparingly dissolved, but with alteration, and furnishes then a brown-yellow liquor, which is precipitated by water in a white gray. In caustic potass it is very sparingly dissolved, and exposed in this solution for some time to the influence of air and light, it is bleached. From the solution in potass it is precipitated by acids in pale yellow flakes, which, if properly washed, do not redden turnsol infusion. In carbonate of potass it is little or not at all soluble, and insoluble in caustic ammonia, to which, nevertheless, it imparts a yellow colour.

This yellow colouring matter is therefore a peculiar fatty substance, intermediate between the fat oils and the resins, which may be bleached, retaining, however, its property of being with difficulty soluble in alcohol, and of being fat and unctuous. To this Berzelius proposes to apply the epithet of *Xanthophylle* from ξανθος, yellow, and φυλλον, leaf or foliage. He thinks there is every reason to presume that in the disappearance of the green colour and its conversion into yellow, the latter arises from the green by virtue of a change in the organization of the leaf effected by cold, and which modifies the organic process. He has in vain, however, attempted to reproduce the green colour with the yellow; and he has been equally unsuccessful in converting the green into yellow.

The brown colour of the foliage presents no common character with the yellow. It is produced by an extractive principle, at first colourless, which, after the disorganization of the epidermis of the foliage, becomes brown by the action of oxygen, and then communicates to the fibre of the skeleton of the foliage a brown tint, which cannot be removed even by digesting it with a weak solution of caustic potass, and cannot be destroyed by long continued treatment with sulphuretted hydrogen.—BERZELIUS, *Annalen der Pharmacie*, vol. xxi, st. 3, p. 257.

On the Red Colouring of Fruits.—The red colouring matter of several kinds of fruits has in general been regarded as a blue colour, reddened by an acid. This may be the case as to the colour of several fruits; but all are not in the same predicament; and consequently the colouring matter of those which form the exception ought to be determined separately. Berzelius examined the colour of the Cherry *(Prunus cerasus)* and of the black Currant *(Ribes nigrum)*, and found both to contain the same colouring matter, and the latter to be not blue. This presumption, perhaps, proceeds from the fact, that the juice of these fruits gives, with acetate of lead, a blue precipitate. These precipitates, however, are malate and citrate of lead, with which the colouring matter is combined, and the latter may be withdrawn from it, still slightly mixed with free acid, by a soluble quantity of sulphuretted hydrogen; and, after the separation of the acids, it is as to be now described.

To obtain it pure, it is requisite to separate the acids completely; and the best agent for this purpose is chalk in fine powder, which causes a deposit of malate and citrate of lime. Small quantities of lime are then added, in order to precipitate the neutral malate of lime contained in the liquor, which is next filtered and mixed with a little acetate of lead, when the green blue then formed is separated, because it contains, perhaps, also malate of lead, and whatever is in solution in the liquor is precipitated by acetate of lead.

The green precipitate is collected on a filter, and washed in such a manner that it may be always covered with water to prevent the access of air. It is then decomposed by sulphuretted hydrogen; the filtered liquor is evaporated *in vacuo* over sulphuric acid; the colouring matter left is dissolved in anhydrous alcohol, while the latter leaves undissolved the colouring matter altered by the air, and pectine or pectic acid. By distilling the alcohol and desiccating the residium *in vacuo*, the colouring matter is obtained in the form of a beautiful red transparent brilliant mass.

Much loss is sustained in determining at first, in the juice of these fruits, by the aid of acetate of lead, the presence of a blue precipitate of malate and citrate of lead, then precipitating the colouring matter and the filtered liquor by the subacetate of lead, and decomposing the washed precipitate by sulphuretted hydrogen. In this state the colouring matter is soluble in all proportions in water and in alcohol, but insoluble in ether. After evaporation of its solution in the sand-bath it remains aqueous; but there is formed a deposit less soluble in water, and very little soluble in alcohol, viz., another red colouring matter less alterable. If to a solution of the colouring matter in water there be added a little milk of lime, a gray green combination is precipitated. The colouring matter not yet precipitated is red, but of another shade, because it contains a combination of lime with excess of colouring matter. If the natural colour of the latter were blue, its solution would be blue, and not red, because then every free foreign acid is saturated. The colouring matter, on the contrary, forms, as has been seen, a combination with the malate and the citrate of lead, and the latter is of a beautiful blue colour; but this colour presents nothing of the particular shade of the colouring matter. The solution of the latter may be preserved without being oxidated; nor is it oxidated so long as it remains in contact with the free acid in the juice of fruits. The brown red deposit is feebly soluble in water, to which it imparts a deep red colour; while potass dissolves it with a deep brown colour. It forms, with ammonia, a neutral soluble combination, and another acid, insoluble or sparingly soluble, coloured red brown. The green neutral combinations of the pure red colouring matter are changed in the moist state, at the expense of the air, into this brown combination. The precipitate of lead, however, constitutes an exception, since it is preserved during washing and desiccation.

Berzelius adds, that he has preserved for sixteen years, without change, the green precipitate obtained from the fruits of the Mountain Ash (*Sorbus aucuparia*), by the subacetate of lead, after having previously separated the malic acid by means of carbonate of lead.—Berzelius, *Opere citato.*

On the Red Colouring Matter of the Leaves in Autumn.—The foliage of certain leaves is observed in autumn to become red. All the trees and shrubs on which Berzelius observed red leaves, bear also red coloured fruits; for instance, the Mountain Ash (*Sorbus aucuparia*), Cherry (*Prunus cerasus*), Gooseberry (*Ribes grossularia*), var. *rubra*, the Barberry (*Berberis vulgaris*), and the like. The red colour contained in these leaves is so near to the preceding that it may be pronounced identical. Berzelius, nevertheless, examined only the red colour of the foliage of the Cherry tree, and especially the red Gooseberry, the leaves of the last of which often become so red that they have completely the aspect of ripe fruits. Their colouring matter was extracted by alcohol, which, after distillation, left a red liquor, which was separated by filtering from a resin, and a fatty substance precipitated. The filtered liquor was mixed with water, which was effected without turbidity, and then with neutral acetate of lead, in which there was formed a precipitate of a beautiful grass green, which, at the end of some seconds, assumed a gray brown colour; and acetate of lead was then added until the precipitate no longer changed, and that last obtained preserved its green colour. It was then separated by the filter, and what was left on the latter is a combination of oxide of lead with the vegetable acids of the leaves, and with a brownish colouring matter which is formed at the expense of the air into red solutions, alcoholic and aqueous. The residual colouring matter was precipitated with a beautiful grass green colour by means of acetate of lead, collected in a filter well washed, decomposed by sulphuretted hydrogen, and evaporated *in vacuo* to dryness. The solution precipitated by acetate of lead still furnished a small quantity of green yellow precipitate, when free acetic acid had been there saturated by subacetate of lead. From this precipitate was obtained a colouring matter entirely similar to the preceding. This colouring matter, to which Berzelius gives the name of *erythrophylle*, from *ερυθρος*, red, and *φυλλον*, a leaf, were it only probably that of the fruits while it is demonstrated to be so, is in aspect and chemical proportions similar to that of the Cherry and black Currant, and differs from them only slightly in the shade of colour, which is a deeper red and inclines more to the blood red, and in the property which it possess of forming green in yellow combinations, while those of the colouring matter of the Cherry and Grape are green or blue. The deposit formed by the evaporation of its solutions is of a clearer brown red than that of the preceding, and gives with the bases clearer brown red combinations, which do not so readily assume in the air a deep shade, than that of the fruits. But whether these shades belong to the deposit of the colouring matter in the leaves, or are peculiar to the colouring matter of the red Gooseberries which Berzelius did not examine, he knows not. The red colouring matter of the leaves, half precipitated by limewater, gives a green precipitate, while the liquor acquires a paler red tint. Thus this colouring matter can no longer be regarded as originally blue.—BERZELIUS, *Opere Citato.*

OBSERVATIONS ON THE FORMATION OF SHELLS.—Mr. Gray whose papers in the Philosophical Transactions are well known, lately delivered a valuable Lecture on the Growth and Structure of Shells, at the Royal Institution. He explained how Shell is secreted by a portion of the skin of the animal termed the mantel, at the edge of which, termed the collar, the process usually goes on with the greatest vigour. The simplest form of shell known to us, is that of a more or less flattened cone, as exemplified in the common limpet, and all other varieties of form may be shown to be modifications of this type; the whole structure of shells being caused by the animal's growing most to one side, and thus turning round a spiral axis. Shells are subject to periods of unusual increase, at which times strong bands or ribs are secreted, which add materially to their strength; the causes of this phenomenon are however unknown. In many shells we find large spines; these at one time corresponded to certain processes of the body of the animal. But when a shell continues to increase in size, and to turn round its axis, these spines might form a serious obstacle to its further growth. To provide, then, against this inconvenience, nature has bestowed on the animal a power of removing such spines as may be in its way. Mr. Gray did not explain how this is effected, we presume he means by some process of absorption, but we may remark, that the question as to the mode of this removal, is not yet set at rest by naturalists. At different periods of their growth, some shells vary so much in their appearance, that naturalists generally, even including Lamarck, have believed that the animals had the power of casting their shells, like many of the crustacea. This opinion has, however, been satisfactorily disproved: and the great change in their appearance is caused by the animal's turning back the alæ of its mantel over the edges of the shell, and secreting a fresh layer of shell, as in the case of the cowries. The beautiful variety of colours in shells is produced by a number of glands which secrete colouring matter, and are usually seated around the neck of the mantel. If these glands secrete constantly, then the shell is marked by coloured bands, but if they do so only at times, spots are produced; and thus every variety of colouring and marking may be explained. When the minute structure of shells is examined, it is found that the materials are in many cases not deposited in parallel layers, but in a method which greatly increases their mechanical strength, and which has been applied to the timbering of ships. Some shells are provided with an external membrane, which may be considered as analogous to the periosteum of bone, and has been termed the periostracum while others are devoid of it. The animals inhabiting shells are very generally provided with a flat round layer of bone situated on the inferior surface of their bodies, with which they close the aperture of their shells, when their bodies have been retracted within. These have been termed opercula. Mr. Gray concluded by alluding hastily to the structure of the bivalves, whose shells are constructed on the same plan as those of the univalves; and by explaining the beautiful provision in their hinges, by means of which the two valves are kept open by ligamentous bands when the animal is in its natural situation with its body exposed to the waters of the ocean, while by means of a mouth it is enabled to counteract the natural action of the ligaments, and to close its shell at pleasure.

Directions for Pedestrian Travellers.—Colonel Shaw offers these Directions for Pedestrian Travellers in general, but we would recommend them in an especial manner to the attention of Naturalists whose pursuits necessarily expose them to the inconveniencies of pedestrian travelling. The benevolent Colonel begins with the remark, that if any one intends to make a long tour on foot, it is necessary to take some precautions. I need not say that English shoes are the best. I do not mean new shoes, but those of which the upper leathers are good and soft, and have been worn to fit the shape of the foot. To such a pair of shoes let an additional sole be put with small nails at the toes and sides; care being taken that the heel be not either too high or heavy. Let them be laced a short way up the instep, and of a size to allow the foot to sit easy without being loose, when a woollen stocking is on: of these strong shoes have two pair, and a third pair, not of such strong material, to be worn when you come to the end of your journey. As to the stockings, the greatest care must be taken in the choice, as such as are generally sold in shops are sure to cause blisters both at heel and toe. If you examine the ordinary qualities of stockings in shops, you will find that the threads are drawn together to a point in the middle of the heel, and about the ball of the big toe. Avoid such stockings as they are sure to cause misery. The stockings made by old women on wires are the best, and the finer the wool the better. Of these there should be four pairs; and if a stocking be put over each shoe (the outside innermost) they will not take much room, and will at the same time prevent the shoes from soiling the other things in the knapsack. As to other requisites, the first to be provided is a good knapsack of the best oil-skin. It is to be had in all the military store shops in London. Care should be taken to have the straps of the best patent leather, and a degree broader than usual. The proper breadth for ease is the regulation strap for the Guards' knapsack. They should be so lon that you can use them in the foreign manner if you choose. By this I mean that in the foreign knapsack the fixture from which the shoulder straps play, is placed in the centre of the knapsack, while the English fixtures are placed on the points of the shoulders just in a line with the shoulder straps, so that the whole weight of the knapsack is on the upper part of the arms, instead of being divided over the back. In the French manner the knapsack sticks closer to the back, consequently you do not feel its weight so oppressive. When provided with a knapsack, get a wide cloak, (so wide as to go over the knapsack) of the very finest silk oils-kin, long enough to reach to the middle of the thigh; likewise an oil-skin to the hat. Caps are recommended, but a hat is preferable, as you can carry things in the hollow of it. For a coat nothing is so good as a surtout made of the finest cloth; it should button up close to the neck to avoid cold, the oil-skin cloak can be used either for sitting or laying on the ground. Have two pairs of trowsers of dark gambroon. As it is of consequence to walk cool, if possible, march without drawers, but be sure to put them on at the end of the journey; one pair is enough; they can be washed and dried while you are in bed. As to shirts, have one in the knapsack, and a very long night shirt made of the finest and lightest cotton, which will be found of the greatest benefit when you are not sure of the cleanliness of the bed. If your trowsers are wide, you can even wear it at the end of a day's journey. Of course a fresh flannel under-vest must always be in the knapsack. The best gaiters to wear, are those used by the French when shooting. They are made of the strongest soft leather, with straps to tighten if necessary. They should be as high as the knee, and buckled over the trowsers, so that however dirty the roads may be, on throwing them off, you find your trowsers quite clean and dry. The great difficulty in walking is to keep the feet in good order. This can be done if a little attention be paid at first. For some days before starting, dip your feet in hot water as often as possible for a few moments, and then rub them quite dry. Let this be done morning and evening till you find the feet quite free from a damp feeling. Provide yourself with a good sized tin box, full of the best yellow, or, as it is called in some places, soft soap. It has something the appearance of honey in the comb. Before starting in the morning, rub the soles of the feet, especially about the heels and toes, with the soap, until it has the appearance of a good lather for shaving, and then put your woollen stockings on. Let this be done every morning before starting, and you will find, even in the hottest or wettest weather, you will be able to do a great deal of work, and at the end of the day find your feet cool and free from blisters.

Instead of washing the feet at the end of a journey, rub them first with a damp cloth, and then dry them completely. In some places on the continent it is not possible to get this soap: but in almost every apothecary's shop you can purchase Stag fat, which does very well: and if you cannot get Stag fat, buy Goose fat or Hog's lard. With these fats, I first rubbed the feet with spirits, which is an improvement; but nothing can stand comparison with yellow soap. Have your stockings washed as often as possible; and if they have not time to dry during the night, they can easily be buckled on the outside of the knapsack. By attending to these directions and by instantly rubbing yourself dry and putting on fresh flannels and linen at the end of your day's work, and eating as much animal food as possible, yet drinking no more than is necessary, both body and feet will be in the highest condition.

To prevent thirst in hot weather, nothing is better than to take a great quantity of fresh butter with your bread for breakfast. Avoid drinking water as you would poison: in short, drink as little as possible of any thing, and do not give way to the first sensation of thirst. I strongly recommend starting at day-break, having previously taken breakfast.—*Dublin Journal.*

METEOROLOGY.

THERE has always been one great obstacle to the cultivation of those branches of Natural History which depend upon continuous observation; and this arises from their very nature—namely, that while the powers of Nature are ever active and require no interval of rest, the mind of the most active and determined observer soon sinks under repeated exertion, and can only be restored by periods of repose. While *Man* sleeps, *Nature* works; and we often find that in a brief space we have irrecoverably lost some important link in a chain of evidence which might have led to important results. These remarks apply with peculiar force to the science of Meteorology, in which we have to mark the operations of agents so numerous and apparently so variable that they defy the most acute sagacity to foresee their effects, or comprehend their causes.

Human ingenuity has been busily employed in devising methods to meet this difficulty. Instruments have been invented to make the elements leave a record of some of their most important changes. Thus the self-registering thermometers of Dr. Rutherford and Mr. Six are so constructed that they show the highest and lowest degree of temperature which occurs between any two observations: the new anemometer of Professor Whewell marks the force and direction of the wind between two periods of time. These are important inventions, and will do much to advance our knowledge of meteorological phenomena: but they have one great defect—they register all the changes which have occurred between any two points of time, but they do not mark the precise moment when any particular change takes place. We learn, for instance, from Dr. Rutherford's thermometer, the coldest temperature during the night and the hottest during the day; but we have no means of knowing the exact time when those degrees of temperature took place.

This desirable object, as far as concerns the wind and the rain, has been accomplished by an instrument invented by Mr. Follett Osler, of Birmingham, "The Self-registering Anemometer and Rain-guage," which has been for some time in operation at the rooms of the Birmingham Philosophical Institution, the results of which, united to the daily observations of the barometer, the maximum and minimum thermometer, and Daniel's hygrometer, are embodied in the following tables. It may be necessary to explain to those readers of *The Analyst* who have not seen the self-registering anemometer, a few particulars of its construction. In this instrument, the vane, which is about 16 feet in length, is attached to the hollow metal rod which carries it; consequently, the rod moves with the vane. At the lower end of the tube is a small pinion, which works into an horizontal rack which slides backwards and forwards as the wind moves the vane: to this rack a pencil is attached, which marks every movement in the direction of the wind, on a paper ruled with the cardinal points, and so adjusted as to move forwards at the rate of half an inch per hour by means of a clock. The force or velocity of the wind is at the same time ascertained by a plate, one foot square, placed at right angles to the vane, supported by two light bars running on friction rollers and communicating with a spiral spring in such a way that the plate cannot be affected by the wind's pressure without constantly acting on this spring and communicating its action by a silver wire passing down the centre of the tube to another pencil, by which it thus registers its degree of force. The quantity of rain is registered on the same paper, by its weight acting upon a balance which moves in proportion to the quantity falling. The motion of the balance being communicated to a pencil attached to it, the result is recorded. The receiver is so arranged that when a quarter of an inch of rain has fallen it turns upon its axis and discharges its contents, and the balance being thus relieved from its weight, the pencil returns to zero.

It will readily be seen from this brief description that by means of this instrument we obtain a correct record of every change that takes place in the direction and force of the wind, and every particular connected with the fall of rain, all written down by the agency of those elements themselves, at the precise moment such change occurs. It is impossible to forsee the influence this invention may have on the progress of Meteorology, if it should be generally adopted; and a few facts, as elicited by the one at the Philosophical Institution within the last three months, will, I hope, not be unacceptable. The middle of the last month of the year 1837, was remarkable for the prevalence of high winds. On Monday, December 18th, in the storm from the S.W. which lasted for fourteen hours, the anemometer registered a force of sixteen pounds pressure on the square foot, which is equal to a velocity of nearly sixty miles an hour. The highest gust of wind happened at twenty minutes before seven p.m. On the following Wednesday, (December 20), this gale was exceeded in force, though not in duration, the highest pressure of the wind on that day amounting to *twenty-one pounds and a half* on the square foot. This happened at a quarter before one p.m., and at five p.m. it again obtained a force of twenty pounds. It is worthy of notice, that the highest temperature indicated by the external thermometer, during the month, happened on this day. It was 55° F. and was attained a few minutes before one o'clock. About the same time, the most violent gust of wind was registered. The present year opened with mild weather; the minimum of the external thermometer on January 1st, was 41°. On the 2d of January, a violent gale from the S.S.E. caused the instrument to register a force of sixteen pounds on the square foot. On the 9th of February, a remarkable variation of the wind was indicated; at half-past eleven a.m. its direction changed from S.S.E. to N.N.W. within the space of a quarter of an hour, and the barometer began to rise, and the thermometer to fall. The barometer at nine a.m. had fallen to 28.14 inches, which is much lower than it had ever been previously observed at the Philosophical Institution. The greatest force of the wind was five pounds and a half on the square foot. On the 12th the wind changed from W. N. W. to E. N. E. within three quarters of an hour, beginning at five minutes before ten a.m. In this instance, there was no action upon the barometer. On the 15th, there was a brisk wind from the E. S. E. at half-past five p.m. One gust reached a force of eight pounds and a half, when the wind immediately changed to N. N. E. On the following day (the 16th), the direction became due East, and at ten minutes before two p.m. the force amounted to *eighteen pounds and a half.* On the 25th, the barometer was lower than on the 9th. It will be seen by the Journal that the mercury had fallen to 28.12 inches.

It would be superfluous to make any remark upon these facts; for, it is evident from the connection shown between the change in the current of the air and its alteration in weight as indicated in the observation on the 9th of February, that if, in conjunction with the Anemometer, a barometer could have indicated the *exact instant* when the mercury began to move, it might have led to important discoveries in Meteorology.

W. ICK.

Birmingham Philosophical Institution,
March, 15, 1838.

JANUARY.

o'Clock, p.m.		Dew Point, in degrees of Fahren.		External Thermometers.				Rain in Inches, read off at 9, a.m.	Direction of the Wind at 9, a.m.	Remarks.
				Fahrenheit.		Self-registering.				
arom.	Attch'd. Therm.	at 9 a. m.,	at 3, p.m.	9, a.m.	3, p.m.	Lowest.	Highest			
9.35	47.5	43.5	43.5	43.0	45.0	41.0	46.0		S. E.	A mist condensing into rain, a. m.
.21	46.0	36.5	44.0	35.0	45.5	32.0	46.0	.075	S. S. E.	Dense mist when the dew point was taken a.m.; light rain towards noon; [brisk gale at night, 16lbs. on square foot.
.1	45.5	39.5	40.5	39.0	43.5	38.0	44.0	.065	S.	Very fair.
.45	43.5	38.5	40.5	38.25	42.5	34.0	43.0		S.	Light rain when dew point was taken a.m.; fair after; halo round moon.
.71	42.0	33.0	39.0	33.5	40.5	32.5	41.0	.025	S. S. W.	Very fair.
.72	37.5	28.5	32.5	29.0	30.5	28.5	31.0		S. S. E.	Dense fog all day
.79	37.0	32.0	32.5	32.0	33.25	29.0	33.5		E.	Foggy morning; sprinkling of snow after sunset.
.85	34.25	25.0	28.5	25.0	29.5	24.5	30.0	.005, snow	E. S. E.	Fine morning; snow towards night.
.71	31.5	22.5	21.5	23.5	25.0	22.0	26.5		N. E.	Snow, with little intermission, all day.
.55	30.5	27.5	28.0	28.0	29.75	23.0	31.5	.025, snow	N.	Ditto ditto ditto
.49	31.5	24.5	28.5	26.0	30.0	22.0	30.5	.030, snow	N. N. W.	Fair.
.81	31.5	26.5	25.5	27.0	28.5	26.0	30.0		N. N. W.	Dense mist, a.m.; fair.
.74	34.75	25.5	21.5	25.0	25.0	24.0	27.0		E.	Misty morning; fair,
.45	31.0	17.5	20.0	20.0	22.25	19.0	25.0		N. E.	Light sprinkling of snow, flakes crystallized in star-like forms; a.m. fair.
.28	29.0	10.5	17.5	15.0	16.0	13.0	16.5		N. E.	Dense fog, clearing up into a beautiful day.
.45	29.5	24.25	28.5	24.75	30.5	20.0	31.0		N. N. W.	Heavy mist, with slight deposition of snow a.m.; gloomy all day.
.75	33.0	24.5	26.5	26.5	31.0	23.0	32.0		N. W.	Misty, 9 a.m.; occasional sprinkling of snow.
.5	31.5	24.5	19.5	25.0	22.0	24.0	25.0		E. N. E.	Slight deposition of snow, 9 a.m.; fair,
.31	25.25	16.5	14.5	19.0	20.5	16.5	22.0		N. N. E.	A beautiful day.
.37	23.5	10.0	13.5	9.75	17.5	9.0	17.75		N.	Dense fog with hoar frost; fair; maximum temp., 3½ p. m
.19	27.5	16.5	26.5	23.5	30.5	16.5	31.0		E. S. E.	Beautiful morning; overcast, p.m.; rapid thaw from about sunset.
.14	36.5	35.0	38.5	37.5	40.5	30.5	41.0	.070	S. S. E.	Overcast all day; fine clear evening.
.2	35.0	31.5	32.0	32.5	32.0	31.0	34.0		E.	Overcast all day.
.31	32.0	25.5	21.5	24.5	24.0	24.0	25.0		E.	Slight snow; brisk wind from the east, max. force 15lbs. on square foot.
.02	31.25	20.5	21.0	24.5	27.0	23.0	27.5		E. N. E.	Slight depositions of snow at intervals during the day.
.88	31.5	25.5	24.0	25.5	27.5	24.0	29.0		E.	Overcast, but fair.
.82	33.0	25.0	25.5	26.75	29.5	25.5	29.75		E.	Misty morning; overcast, but fair all day.
.92	31.25	28.0	28.5	29.5	29.5	28.5	31.0		E. S. E.	Dense mist; snow towards night, ending in a thaw.
.94	33.5	33.5	35.5	34.0	39.5	27.0	40.0	.210	E. S. E.	Overcast all day.
.14	39.5	34.5	33.5	34.0	33.5	34.0	35.0	.190	S.	Dense heavy fog all day.
.35	37.0	32.5	33.5	31.0	32.0	28.5	33.0		E. N. E.	Dense haze all day.
.39	34.25	27.02	28.56	27.94	30.74	25.56	31.77	.695, *Sum.*		

rometer.	Thermometer.	Dew Point.	
3 p.m.		9 a.m.	3 p.m.
29.85, 8th	46.0, 1st & 2nd	43.5 1st	44.0 2nd
28.82, 27th	9.0, ...20th	10.0 20th	13.5 20th

Height of the cistern of the barometer above the ground, 23ft. 6in.
Height of the cistern of barometer above the presumed mean level of the sea, 472ft. 6in.
Height of the external thermometers above the ground—Fah., 4ft. 6in.; Self-reg., 4ft. 6in.
Height of the receiver of the rain-guage above the ground, 38ft.

FEBRUARY.

Feb.	9 o'clock a.m. Barom.	9 o'clock a.m. Attch'd Therm.	3 o'clock p.m. Barom.	3 o'clock p.m. Attch'd. Therm.	Dew Point, in degrees of Fahren. at 9 a.m.	Dew Point, in degrees of Fahren. at 3 p.m.	External Thermometers. Fahrenheit. 9 a.m.	External Thermometers. Fahrenheit. 3 p.m.	External Thermometers. Self-registering. Lowest.	External Thermometers. Self-registering. Highest	Rain in Inches, read off at 9 a.m.	Direction of the Wind at 9 a.m.	
1	29.57	36.75	29.61	37.0	31.5	32.5	31.5	32.5	31.0	33.0	.010	N. E.	Overcast, but fai
2	29.83	35.5	29.84	34.5	29.5	25.5	31.5	32.0	29.0	32.5		N. N. E.	Fair, but overcas
3	29.85	34.25	29.84	32.5	23.0	22.5	27.5	32.0	27.0	33.0		N. E.	Fine clear day;
4	29.88	33.25	29.85	35.0	24.0	27.5	26.0	31.5	25.0	33.0		N. N. E.	Very fair all day
5	29.79	33.5	29.73	32.0	30.0	33.0	30.5	34.0	24.0	34.5		N. N. E.	Hazy, with a slig
6	29.52	34.0	29.32	37.0	28.5	32.5	28.0	35.0	27.5	35.5		E. N. E.	Fine clear day;
7	28.95	37.5	28.81	39.0	36.5	39.5	37.0	39.0	29.5	39.5	.200	S. E.	A rapid thaw, wi
8	28.48	43.0	28.44	44.5	42.0	42.5	42.0	43.5	38.5	45.5	.255	S.	Fair, rain at nig
9	28.14	44.0	28.28	42.0	41.0	39.0	41.0	36.5	37.0	42.0	.275	S. S. E.	Fair; at 11¼ a.m
10	28.66	36.5	28.66	37.0	26.0	28.5	28.0	33.0	27.5	33.5	.020	N. N. E.	Very fair.
11	28.86	33.0	28.93	35.0	21.5	22.0	25.5	33.5	24.5	34.0		N. W.	Very fair.
12	29.05	33.0	29.04	34.0	26.5	30.0	29.0	30.5	26.5	31.0		W. N. W.	Hazy; beautiful
13	29.02	31.5	29.02	33.0	23.0	30.5	26.0	32.0	23.0	33.0		E.	Very fair.
14	29.22	30.5	29.17	33.5	21.0	31.0	24.5	35.0	22.0	34.5		N. E.	Very fair; at no
15	29.11	32.0	29.04	33.0	28.5	31.0	28.0	31.5	26.0	32.0		E. S. E.	Overcast; gale
16	29.03	32.0	29.06	34.5	27.5	32.5	28.0	34.0	25.0	35.0		N. E.	Overcast; much
17	29.1	33.5	29.1	35.0	29.0	31.0	27.5	32.75	25.5	33.5	.080	E.	Snow at interval
18	29.49	34.5	29.57	36.0	31.0	32.0	30.0	34.0	29.0	34.5	.060	N. E.	Overcast all day.
19	29.59	34.0	29.5	36.5	31.5	34.0	31.5	34.5	29.0	36.0		E. S. E.	Overcast; a gen
20	29.19	33.5	29.12	36.0	23.0	30.0	26.0	34.0	23.5	35.0		E.	Very fair.
21	29.22	34.5	29.21	35.5	29.0	33.5	29.0	33.0	28.0	34.5		N. E.	Fine morning;
22	29.21	36.0	29.15	38.0	30.5	32.0	31.0	35.5	30.0	36.5		N. E.	Fine morning;
23	28.97	36.5	28.87	37.0	32.5	36.0	31.5	33.0	30.0	34.0		E.	Slight deposition
24	28.3	38.25	28.18	39.5	36.0	38.0	34.5	37.5	31.5	38.0		E. N. E.	Rain while the d
25	28.12	42.0	28.22	44.0	40.0	39.0	40.0	45.0	37.0	45.5	.800	S. E.	Rain at 9 a.m., c
26	28.48	41.0	28.52	40.0	34.0	36.0	35.0	33.5	34.5	36.0	.025	N. E.	Overcast a.m.;
27	28.64	39.0	28.63	40.5	31.0	33.5	33.0	34.0	32.0	35.0	.155	E.	Gloomy, with fa
28	28.61	39.0	28.61	40.0	33.5	35.5	33.0	35.5	33.0	36.5	.190	N.E. by E.	Heavy mist con
Mean	29.05	35.11	29.06	37.0	30.25	32.69	31.09	34.64	28.98	35.68	2.070, *Sum*		

	Barometer. 9 a.m.	Barometer. 3 p.m.	Thermometer.	Dew Point. 9 a.m.	Dew Point. 3 p.m.
Highest, ...	29.88, 4th	29.85, 4th	45.5, 8th & 25th	42.0, 8th	42.5, 8th

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Jan.	9 o'Clock, a. m. Barom.	9 o'Clock, a. m. Attch'd. Therm.
1	29.41	47.25
2	29.33	44.0
3	29.02	44.0
4	29.37	42.0
5	29.7	40.5
6	29.73	34.5
7	29.79	36.5
8	29.88	34.0
9	29.75	30.5
10	29.61	31.0
11	29.46	30.0
12	29.77	32.0
13	29.76	32.0
14	29.53	30.5
15	29.31	28.25
16	29.36	28.75
17	29.74	31.75
18	29.58	31.0
19	29.33	27.0
20	29.4	24.5
21	29.3	25.5
22	29.11	34.0
23	29.21	36.0
24	29.29	35.5
25	29.11	30.5
26	28.91	31.0
27	28.83	31.5
28	28.93	33.5
29	28.89	34.0
30	29.13	38.5
31	29.29	36.5
Mean	29.39	33.77

	9 a.m
Highest, ...	29.88,

DIVI BOTANICI;

OR, SKETCHES OF BOTANISTS WHOSE MERITS ARE COMMEMORATED IN THE APPELLATIONS OF PLANTS.

Article the Third.

Without being used in a figurative acceptation, magnanimous pusillanimity might well express that form of disintegrity in the mental manifestations, where a person has lost his power of exercising the heroism of virtuous fortitude in enduring unsurmountable misfortunes or miseries, and recklessly seizes the hardihood of desperate cowardice in escaping from his wretchedness by desertion of his duties and a defiance of the Deity, in rushing headlong into self-destruction. Such a procedure, in all its sources and bearings, is utterly repugnant to the natural instincts which maintain the desire and care of existence originally implanted, by the Creator, in the first of every animated race for transmission to its latest progeny; and such a procedure also is irreconcilably adverse to the innate faculties of mind that intuitively encourage man in cultivating its pure moral and religious principles; and such a procedure moreover constitutes a most outrageous transgression of the all-righteous precepts instituted and revealed by the Divinity himself in the Sacred Scriptures, for advancing the perfectibility of his intelligent and amenable offspring. Hence, in the mere act of self-destruction, independent of all other circumstances, there is evidence both manifest and conclusive, that the forlorn suicide had become misconscious of his pride or despair, that he had lost ability to obey the highest of his feelings and sentiments and rational energies, that he had been thrown by his malady into the state that required him to be considered as partially insane, though not in all cases irresponsible. While then, with all fairness, it should be concluded that an act—in its three-fold character, unnatural, impious and irrational—must absolutely result from the causes of derangement in the mental manifestations; with equal fairness and strength of testimony, it may also be concluded that, when it is perpetrated by sages and saints, by individuals eminently distinguished for the sublimities of wisdom and the excellencies of piety, the same act originates from the causes of disorder in the functions of some or many of the mental faculties, while the rest remain unaffected or imperceptibly disturbed. Well and most wofully confirmed is this doctrine of partial insanity, by the melancholy fate which extinguished the fortunes of Marcus Cato,* of his daughter Porcia, and of her husband Marcus Junius Brutus—all so illustrious for their high mental endowments, their extensive learning, and their patriotic virtues. These and every other ennobling distinction of character were depraved, in those celebrated personages, by the effects of a profound constitutional impregnation with the germs of that passion which discloses itself in the manifestations of suicidal insanity.

Among the victims to the pest of magnanimous pusillanimity, and the intenseness of its impulses, not unhonoured is the name of Juba, the Mauritanian prince, who perilled his own destiny and that of his kingdom, by associating its resources with those of the Roman republicans, in their resistance to the Cæsarean faction and its encroachments on the revered institutions of their country. When the disastrous field of Thapsus* had overwhelmed their armies in ruin and dismay, the vanquished monarch had his inherent malady thrown into a state of exaltation which impelled him to snatch at an inglorious escape from ignominy in a rush from life, while his family, his kindred, and many of his people were carried captives to Rome, to swell the execrable glories of her first Emperor's triumph. With others of his degraded compatriots, Juba the king's son endured this indignity—a cruel infliction, in every sense most hatefully selfish and arrogant. Nevertheless, so powerful are the native energies of wisdom and virtue, that this prince enabled himself, by their judicious culture and adaptations, to establish the sovereignty of character, even among the supercilious oppressors by whom the liberties of his father-land were exterminated.

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* Cato of Utica and Brutus his son-in-law are wont to be represented as superlative patriots, in whose deportment the highest moral, political and religious virtues appear with a practical pre-eminence. Subjected to the scan of reason and of science however, these virtuous displays become the features of a fondled affection, habitually deriving its sources from a misbalancement of the mental economy. When pressed to extremity by the reverses of a "fratricidal" warfare, these stern senators resolved deliberately, but with the recklessness of insolent despair, to adopt the base resource of suicide as the best expedient for anticipating the horrors of captivity and degradation. Hence came the scenes of the three-fold tragedy: when, with the composure of deranged reflection irretrievably bewildered by misconceptions of the Platonic philosophy, Cato killed himself; or, in gentler phrase, *vitâ se abdicavit:* then, after being a murderer of his friend and benefactor, Brutus assisted his own soul in disembodying itself, inconscious of guilt or impenitence: and then, disdaining to survive the disasters of her husband and father, Porcia put an end to her existence by swallowing a piece of burning coal. These facts, though terrible, are instructive; they illustrate the horrid vigour of concentrated insanity; they exemplify the monstrous obliquity of sentiment engendered imperceptibly by the hallucinations of pride.

* Juba united his native forces with the republican army under Scipio, and they were defeated by Cæsar near Thapsus, an African town which this battle rendered famous with posterity. Being deserted by his Mauritanian subjects, Juba terminated his unfortunate career by a method in his madness, which evinced distinctly that its wild ascendancy had prostrated for ever the highest principles of his mind's immortal nature. Juba and his friend Petreius, a Roman officer, agreed to execute their mutual destruction by engaging in a single combat: in this, the king fell first; and the survivor, by his own commands, was slaughtered by a slave.

Historians* evidently delight to expatiate on the amenity of Juba's dispositions and the purity of his principles, on his extraordinary proficiency in literature and philosophy, and on the splendid development of his fortunes. While the nations all around were harrassed with the flagitious enormities of war and rapine, and while Rome herself, their imperial enslaver, was trembling in the dread of imminent destruction by the strife of her degenerate citizens, the expatriated Prince found consolation and happiness, under his manifold bereavements, in the solace and tranquility of philosophical contemplation. Here, however, as if moderation had not ensured its certain reward, as if the Creator's providence did not over-rule all the events of life to the best though often inscrutable purposes, the short-sighted chroniclers of that dissolute age were eloquent in ascribing the causes and consummation of Juba's prosperity to the results of fortuitous operations. Thus, say the ancient biologists, his captivity became the source of the greatest honours, and his application to study procured him more glory than he could have obtained from the inheritance of a kingdom.

By the courteousness of his manners, Juba gained the affections and respect of the Roman people; and, in recompense of his exemplary fidelity, Augustus gave him Cleopatra the daughter of Antony and the Egyptian queen in marriage, bestowed on him the title of king, and made him sovereign of all the territories which his father formerly possessed. After his decease, so greatly and so deservedly revered were the righteousness and benignity of his patriotic reign, that his people instituted a solemn ritual for worshiping, with divine honours,[*] the character and memory of their philanthropic monarch —the device of a grateful veneration unimbued with the Celestial Wisdom revealed to man, for the exaltation of his intellects in guiding the exercise of his moral and religious powers.

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* Many interesting observations illustrative of Juba's character, both as a king and a scholar, are recorded in the compositions of Greek and Roman historians. For instance, Strabo; *Rerum Geographicarum libri septemdecim græcè et latinè, curante Thomâ Falconer; folio, 2 tomis, Oxonii*, 1807: Dion Cassius; *Historiæ Romanæ quæ supersunt, græcè et latinè, curâ H. S. Reimari; folio, 2 tomis, Hamburgi*, 1750: Pliny; *Naturalis Historiæ, libri* xxxvii; *folio, Venetiis*, 1469; *folio*, 3 *tomis, Berolini*, 1766; and Dr. Holland's English version: Suetonius; *De XII Cæsarum vitis, ex recensione Grævii*, 4*to, Trajecti ad Rhenum*, 1672; and the English versions by Dr. Holland, Jabez Hughes, and Dr. Thomson who has increased the value of his translation by adding useful annotations, and a review of the government and literature of the Romans at different periods.

Besides administering the affairs of his kingdom with assiduity and justice, Juba enjoyed a favourite occupation in the study of literature and the sciences. From facts procured by personal investigation, he composed a natural history of the Mauritanian regions: he also wrote monographs on the Euphorbium, on the Tree that yields Frankincense, and on the ΟΠΟΣ,[†] *Laser* or juice of the Silphium, emphatically so designated from the extravagant estimation in which it was then held by the Roman people. Another work of his was an elaborate account of the Roman transactions, in the Greek language, and his authority was often quoted with commendatory remarks by the ancients: only a few fragments of this, however, have escaped the havoc which interrupted the first stage of European civilization. Another treatise of his contained descriptions of Arabia and of the Assyrian antiquities, after the method of Berosus*

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[*] By the Athenians, a statue was raised and consecrated in honour of this illustrious prince, who preferred the quiet pursuits of science and philanthropy to the more dazzling enterprizes of robbery and carnage in war. Tradition relates the tale, that the Æthiopians were the first inhabitants of the earth; that they were the first who worshiped the gods; and that, for this piety, their country was never invaded by a foreign enemy. The posterity of these reputed progenitors of the human race, exalted Juba to the "divine order," and worshiped him as a deity; such was the extravagant devotion with which the ancient Polytheists were prone to regard great personages, distinguished for generous or patriotic excellency; and such are the fruits of an energetic veneration when undisciplined in true wisdom or mistrained by the ignorance or artifice of its guides.

[†] ΟΠΟΣ was the term anciently used for designating *Juice* in general: under restriction, it denoted the crude sap of plants, whether expressed or extilled: ultimately, it came to denote *the Juice*, allusively to that of the *Silphium*, with a signification of pre-eminence: but, in its earliest acceptation, the word usually represented the milky juice of the wild Fig-tree employed for curdling milk, by the primitive races of men. The LASER was a resinous gum which the Greeks and Romans reckoned equally valuable as gold, both for culinary and medicinal purposes. At Rome, it obtained the highest consideration in being deposited in the national treasury as available property. When Julius Cæsar usurped the government of his country, he seized and sold one hundred and eleven pounds of the Laser, as his chief resource for defraying the expenses of the first civil war,—a curious fact which displays the effect of appreciating things, whether plants or books, according to their rarity. This precious substance was transparent, russet-coloured, and fragrant; in some of its sensible qualities, it resembled myrrh; in taste, it was hot, tart, pungent; its virtues were inestimable, in that they proved a reputed antidote to all sorts of poison, could restore sight to the blind, and had the power of protecting youth from the dreaded encroachments of old age! Various places in Syria, Libya, Media and Armenia, but

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especially the mountainous districts around Cyrené, furnished the supplies of this rare product; but much uncertainty, together with a profusion of conjectures, has been exhibited in the discussions of naturalists, in their essays to determine the precise vegetable from which the Laser was procured. Nearly two thousand years since, the knowledge of this was lost to the herbalists and the physicians; and, notwithstanding the zealous assiduity and science of their successors in botanical research, they have not ascertained more than the probability, that the high-prized Cyrenean gum was the exudation of an umbelliferous plant. With the ancient Greek phytographers, the term ΣΙΛΦΙΟΝ denominated that wondrous vegetable which originally enjoyed the reputation of yielding the Laser; and, by descriptive comparison, it had a thick root, a stem resembling that of a *Ferula* and leaves like those of an *Apium*, with large flattened and leaf-like seeds. From incisions in the root and stem of the *Silphion*, there issued the fluid which, from *sirpe* changed to *serpitium*, the Latins first called *lac serpitium* and then corrupted into *laserpitium*—a term sufficiently barbarous although retained as a generic appellation in modern botanical nomenclature. From the growth and culture of this concrete juice, many advantages resulted to the "political economy" of Cyrené; and, in acknowledgement of these, the inhabitants had a figure of the Silphion represented on the reverse of their medals, as the emblem of their flourishing "pentapolitan" state; with reference to the same source of celebrity, also designated the "*Silphiferous* region."—Garcias ab Orta: *Coloquias das Simples y Droguas he Cousas Medicinais da India;* 4to, *Goa*, 1563. Theophrasti *Historia Plantarum, græcè et latinè, curante J. B. a Stapel; folio, Amstelodami*, 1644, pp. 586, 598, with figures of the Cyrenian medal and plants. Plinii *Historia Naturalis; Lib.* v, *Cap.* v; *Lib.* xxii, *Cap.* xxiii. Dr. Holland's Pliny, vol. i, p. 94, and vol. ii, p. 133. Dioscorides *Opera, græcè et latinè, ex interpretatione J. A. Saraceni; folio, Francofurti*, 1598, *Cap. xciv, p.* 212. L. J. Conti, M.D. *Il Vero Silfio overo Laserpitio degli antichi; Giornale de' Letterati; 4to, Venezia*, 1673. Prosterus Alpinus, M.D. *De Plantis Exoticis Libri*, 4to, *Venetiis*, 1628, p. 211. John Lawrence; *A New Systeme of Agriculture; including a particular account of the famous Silphium of the Ancients; folio, London*, 1726. A. F. Walther: *Programma de Silphio; 4to, Lipsiæ*, 1746. Dictionnaire Universel *de Matière Medicale et de Thérapeutique Générale; par F. V. Mérat, M.D. et A. J. De Lens, M.D. 8vo, Paris*, 1832; *Tome iv, p.* 43, where several Memoirs on the Laser are cited.

* Babylon was the birth-place of Berosus, and he officiated as a priest of the temple consecrated, in that city, to the adoration of God the creative deity whose emblem was the sun, designated Belus or Baal by His oriental

in his topographical collections. Juba was also the author of essays on grammar and painting and Roman archæology, of some dramatic sketches, and of various pieces on the nature and economy of animals—all of which have irretrievably perished. Such then, are the outlines of Juba's portraiture, as a prince and a philosopher: it was while taking delight in the "study of mankind" amid the blandishments of imperial favour, that he found happiness in cultivating the friendship of Antonius Musa and his illustrious brother

EUPHORBUS *the Physician.*—When Pythagoras proclaimed the rule for his disciples, ΑΠΕΧΕΣΘΑΙ ΤΩΝΚΥΑΜΩΝ, *fabis abstine, abstain from beans,*[*] his precept shewed clearly that the sage himself was not "of Leicestershire;" but, when he required the same disciples to admit his doctrine of the *Metempsychosis* or transmigration of souls, he shewed with equal clearness that he had obtained initiation into the hieroglyphic mysteries of the Egyptian psychosophy, and into those on which the gymnosophists of India were wont to contemplate in their solitary retreats. With a view to establish the truth of this chimerical notion, the Samian philosopher fell into the flagrant moral obliquity of affirming that his own soul had heretofore inhabited the bodies of Æthalides,[†] and of Hermotimus, and of Euphorbus, a

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votaries, and Bel by His western worshippers, under the druidic theosophy. Berosus acquired an extraordinary reputation for the knowledge and experience, gained by foreign travel. He visited Greece, and made a long residence at Athens, whose clever but cruelly fickle "*People*" erected a statue in the Γυμνάσιον or place for exercises, with the object of honouring his learning. He flourished in the third century before the vulgar era; and, besides distinguishing himself by his astronomical predictions, he composed a history of the Chaldæan nations; but not more than a few fragments of this work have been preserved from the ravages of barbarism and time—these unrestrainable destroyers.—Flavius Josephus: *Opera, græcé et latiné, cum versione novâ et notis Joannis Hudsonii; folio,* 2 *tomis, Oxonii,* 1720*;* and Whiston's translation.

[*] Varying greatly in their ingenuity, many interpretations of this singular preceptive apothegm have been propounded, both by metaphysicians and archæologists. More probable than most of the others, however, is that which would represent the Sage of Samos as desirous of declaring by it, his profound abhorrence of the *Bean* as an instrument, like the shell in ostracism, of secret and irresponsible voting—a cowardly and tyrannical expedient by which many excellent persons and much valuable property were sacrificed by the villainy of malice or selfishness.

[†] Æthalides enjoyed the distinction of being reputed a son of the god Mercury: he was a herald by profession; and, through his father's influence, he obtained the singular privilege of appearing among the living and the dead, at stated times.—Hermotimus was a Clazomenian by birth, and a revered soothsayer by character. His ghostly freaks and their issue are re-

brave Trojan warrior who was slain in one of those sanguinary conflicts which wrought his country's utter devastation. His dead body suffered the indignity of being stripped of its armour on the field of battle, and his shield was afterwards deposited as a trophy in the temple of Juno at Argos, by the king Menelaus who had won the high-valued spoils by their owner's slaughter. Thus it is, that men reputed wise and great see glory in the destruction of their fellow-men, during that stage of the social system when the Mind has not discovered the natural supremacy of its moral sentiments, but exults in yielding a ready submission to the impulses of its own animal instincts.

By the annalists of primæval transactions, the inquisitive naturalist is left unacquainted with facts or incidents which might justify him in concluding that, like other co-eval military chiefs, the Trojan Euphorbus was eminent for his knowledge of plants, or skilful in their medicinal applications. Neither, in ancient memorials, is it stated that the name of this personage was ever conferred on any vegetable, for any reason, notwithstanding his celebrity ranks high on the records of heroical renown. With regard to Euphorbus the physician, however, his position stands distinctly the reverse. It has been drawn concisely, but comprehensively, in the sketches of Pliny the naturalist; and, in being delineated by an almost cotemporary hand, these sketches would be founded on statements considerately weighed with a view to faithfulness of representation. While enumerating the African nations geographically, he introduces this descriptive account:—"Juba, the first prince who reigned over both the Mauritanian kingdoms and acquired extraordinary fame as a philosopher, relates in his natural history of Mount Atlas that the herb Euphorbia grows there, and was so denominated in honour of his physician, by whom the plant was discovered." Again, in that section of his work which consists of philosophical commentaries on the nature of vegetables *sponte nascentium*, the

lated by Pliny the naturalist, from legendary chronicles. In one of the prophet's ecstacies, actual or assumed, his body was taken for dead and consumed on a funeral pyre, by his family.—For support of his psychological delusion, Pythagoras courageously asserted his soul's recollection of many exploits achieved by Euphorbus, while it inspirited that hero's body; and, with a similar aim, the "divine instructor" practised the experiment of pointing out the Trojan's shield in the temple, where it had remained for ages, at first sight and without assistance! Such fables are not uninstructive: they constitute a lofty beacon to the Mind, by displaying the wild recklessness of imagination when it escapes from control of the moral principle.

Roman phytographer* inserts these curious and gratifying observations:—" No longer ago than in our forefathers' daies," he relates, " Juba, king of Mauritania, found out the herb *Euphorbia*, which he so called after the name of his own physitian Euphorbus, brother to that learned Musa, physitian to Augustus Cæsar, who saued the life of the said emperor. These two brethren physitians joined together in counsell, and gaue direction for to wash the body all ouer in much cold water, thereby to knit and bind the pores of the skin; for, before their time, the manner was to bathe in hot water only, as we may see plainly in Homer the poet. But now, to return vnto our herb Euphorbia, the foresaid king Juba wrote one entire book, at this day extant, wherein he doth nothing else but expressly set forth the commendable vertues and properties of this one herb. He found the same upon the Mountain Atlas where, he says, it is to be seen bearing leaues resembling branc-vrsin: so strong and forcible it is, that those who receive the juice issuing from it, must stand a good way off; for the manner is, to launce it first, and then presently to retire backe, and so at the end of a long pole to put vnder it a trey made of a kid's stomach for a receptory, into which there runneth forth out of the plant, a white liquor like unto milke, which, when it is dried and growne together, resembleth in shew a lumpe of frankincense. They that have the gathering of this juice, called *Euphorbium*, find this benefit thereby, that they see more clearly than they did before: an excellent remedy this is against the venom of serpents; for whatsoever place is stung by them, make an incision at the upper part of the wound and apply thereto this medicinable liquor, and it will surely cure it." Several inferences, some probable, others certain, naturally arise out of these statements. Hence then, it would appear that Euphorbus had at first been subjected to the same hard fortune as Antonius Musa his brother, in being thrown into a servile condition: that he co-operated in the unusual but successful method of treating Augustus with cold affusions: that he accompanied Juba as his physician, on the restoration of this prince's ancestral dominions by the emperor's munificence: that Euphorbus assisted at the discovery, or was himself the discoverer, of the vegetable which his sovereign then styled *Euphorbia* by an express denomination: and that, in this way, the king manifested an affectionate generosity, in honouring the merits of his medical officer by the rites of a " deification" which assigned him an early position among the herbarists whose names are commemorated in the appellations of plants.

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* Dr. Holland's English version of Pliny's *Natural History of the World* Vol. ii, p. 222; and Book xxv, Chapter vii of the original.

EUPHORBIA *the Plant.*—Reasons have been deduced from an ancient writing for the conjecture, that the name *Euphorbium* was applied to some vegetable production, previously to the time when Juba and his physician were engaged in their botanical researches. When this proposition is entertained, its grounds are taken from an interpretation of certain enigmatical Greek verses, ascribed to Herrenius Philo,* a physician and philosopher of Tarsus, who invented the *Philonium,* a celebrated anodyne composition. His metrical instructions for preparing this medicine, are abundantly obscure; and, in the original version, they constitute an exquisite anthological curiosity. For instance, one of the mystical ingredients is "*the slayer of the son of Menœtius among the Trojans;*" and another stands for interpretation, as *the fair and fragrance-breathing hair of the god-like one, whose blood glistens in mercurial plants;* which, in terms intelligible, may stand for the juice of white poppies or opium, even more deservedly renowned than Mercury's *Caduceus,* for its somniferous energies.

Some commentators on this singular production are inclined to consider the "*Slayer of Menœtiades*" as the symbolical representative of Euphorbus the Trojan chief so justly applauded for his patriotic heroism; and, on this interpretation, they regard him as the personage for whose honour the herb Euphorbia had its distinctive name originally appropriated. Now, by all history, it is made evident that, except in the machinery of a poetical fiction, Euphorbus cannot be held for the slayer of Patroclus, because this friend of Achilles certainly fell by the hand of Hector, who seized the armour of his lifeless enemy. Moreover, Philo's celebrity was nearly coeval with that of Antonius Musa and his brother's: indeed, it was later than their's according to the best chronology:† there would, therefore, be no improbability in concluding, that Juba's monograph on the Euphorbia and the history of its discovery were known to Philo himself, who might choose to elaborate an allegory exhibiting an ancient name as the prototype of a new-made appellation, in the wildness of his predilection for the display of fantastic imagery.

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* Stephanus Byzantinus: *De Urbibus, græcé et latiné, curis Berkelii et Gronovii; folio, Lugd. Bat.* 1694. Daniel le Clerc: *Histoire de la Medecine;* 4to, Amsterdam, 1702; Part III, p. 14, where an attempt to unmystify the *Philonium* may be examined.

† Euphorbus and Musa cured Augustus, who died in A.D. 14, and Philo *flourished* in A.D. 23, according to the most accurate history of medicine.

Still farther strengthened is this conclusion by the fact, that the Spurge is not mentioned by Theophrastus*, who flourished at the long interval of three centuries and a half before the age of the distinguished Mauritanian prince, and his physician. Without limitation also, it is declared by Dioscorides†, who compiled his Phytology soon after Philo's decease, "that confessedly the Euphorbium was discovered on Mount Atlas during Juba's reign;" while, on the other hand no tradition, and no record either, exist to shew that even the admired *Philonium* itself was divulged for practical use antecedently to the period here specified. Again and expressly, there comes the definite affirmation of Pliny‡, who was born in the year of Philo's mid-age, that the *Euphorbia* was actually discovered and denominated by the Mauritanian king and his associates in the pleasant exercises of "herbarization." Furthermore and conclusively, about two hundred years subsequent to its discovery, Galen‖ essayed to describe the Philonium and to unriddle the cryptical metres which enumerate its elements, in an exposition of these and their salutary qualities; and, in this also, he admits for an established truth the statement of Pliny, "*volumen Jubæ quoque extat de herbâ Euphorbiâ, et clarum ejus præconium,*" the existence of Juba's book on the Spurge, and its high reputation. Throughout succeeding ages, even to the present time, and with one exception§

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* Theophrasti Eresii *de Historiâ Plantarum libri decem græcé et latiné, curâ Joannes Bodæi ex Stapel*; *folio, Amstelodami;* 1644.—Theophrastus was a diligent collector of materials for his unartificial, or rather natural, system of Botany; and in the fact of the *Euphorbium* being unknown to him, there is something in favour of the claim, that its discovery should be ascribed to Juba's physician. In his commentaries on Book XI, chapter x, the learned Editor introduces an elaborate dissertation on the *Euphorbium*, its discovery, name, description, preparation, and medicinal qualities; p. 1056—1058.

† Pedacius Dioscorides: *Opera quæ extant omnia, græcé et latiné; curante J. A. Saraceno, M.D. folio, Francofurti*, 1598: *Lib.* iii, *cap.* xcvi, p. 214.

‡ *Historiæ Mundi, libri* xxxvii; *folio, Lugduni*, 1561; *Lib.* v, *cap.* 1, p. 67. Here the naturalist represents Euphorbus as the discoverer of the plant, in express terms founded on Juba's recognized authority. The king composed a natural history of Mount Atlas; and, says Pliny, concerning this region, *prodidit præterque gigni ibi herbam Euphorbiam nomine, ab inventore medico suo appellatam,* he related moreover that there grows on that mountain the herb named Euphorbia, from his physician, its discoverer.

‖ Claudius Galenus: *De Compositione Medicamentorum secundum loca, curis Cornarii et Macchelli; 12mo, Lugduni,* 1540.—Galen settled at Rome as a physician in A.D. 165, about one hundred years after the publication of Juba's books on the *Euphorbium*, and the Natural History of his kingdom.

§ This was propounded by Claude de Saumaise, in latin *Salmasius*, an ingenious French scholar who acquired an extraordinary celebrity in criticism only, the fact of this royal tribute to a naturalist's approved merits has been unreservedly admitted as an authentic record by the latter Greek, the Latin, Arabian, and modern phytographers. These reasons then, with others that might be adduced to the same effect, unite in authorising the historical induction—that this plant derived its original name from the generosity of Juba, who consecrated its appropriate designation to be a memorial of his affection for Musa's brother; and that, therefore, both the rules of Linnæus and the laws of eternal justice require the glory of this philosophical deification to be recognized as the right of Euphorbus the physician.

Under the Euphorbia as a generic head, the *Linnæan* botanists have arranged a numerous tribe, embracing four hundred species of vegetables; and, in the system styled *Natural*, this plant represents

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and literature. He was born in 1588, and died in 1653; but, as one of his learned countrymen observes, "the high reputation of Saumaise has not been admitted by posterity: he is generally regarded as "*un critique bizarre, aigre et présomptueux;*" yet, he adds, although "*ce savant eut beaucoup de ridicules, il eut aussi de belles qualités qui les compensèrent.*" This "savant" fancied that the *Euphorbium* is specified in one of Meleager's epigrams, where the ευφοϱβης ακανθης is compared to the poetry of Archilochus, in allusion to its satirical causticity; but the phenomenon would be somewhat marvellous, if the ancient physicians were unacquainted with an herb and its active energies which an ancient versifier knew so well as to employ them in a figurative illustration. There is a miswriting here, however; for it is proved by Fabricius that the words should be φοβεϱας ακανθης, with an emblematical reference to the stinging sarcasms of Archilochus which might have suggested the phrases *archilochia edicta* for virulent edicts, and *archilochium carmen* for severe or railing verse.—See Salmasii *Exercitationes de Homonymis Hyles Iatricæ; folio, Ultrajecti,* 1689: and *Bibliotheca Græca, sive notitia scriptorum veterum Græcorum; auctore J. A. Fabricio: xii Tomis, 4to, Hamburgi,* 1790—1809.—Archilochus was a native of Paros: he lived in the seventh century before the Christian era: his writings consisted of epigrams, odes, satires, and elegies. Lycambes assented to the marriage of his daughter Neobule, with the poet; but she was given to a wealthier suitor, and the disappointment so incensed the cynic that he satirised both the father and his child with unendurable severity, and they hanged themselves in a fit of despair. The satirist was banished from Sparta, as an indelicate and petulant intermeddler; and he afterwards lost his life by assassination.—Meleager was born at Tyre, and died in the island of Cos, so famous as the birth-place of Hippocrates, Apelles, and Simonides, and also for its wine and silk-worms. He flourished about one hundred years before our Saviour's advent; and it is to the good taste and zeal of Meleager that the admirers of ancient poetry are indebted for the 'ΑΝΘΟΛΟΓΙ'Α, a collection of Greek epigrams which he selected from forty-six of the most esteemed poets.—See *Anthologia Græca, ab Hugone Grotio latino carmine reddita, ab Hieronimo de Bosch edita; quatuor tomis,* 4to, *Ultrajecti,* 1795—1810 the Euphorbiaceæ—a comprehensive *family*, in which not less than eighty-six genera, including about one thousand specific diversities are distributed. Considered with regard to the products it yields for medicinal purposes and to the deleterious qualities of many plants comprehended in it, this constitutes one of the most important groupes in the vegetable kingdom. Almost all the Euphorbiaceæ, especially the herbaceous kinds, are distinguished by the secretion of an acrid milky fluid which is sometimes volatile, always caustic. It forms a gum-resinous substance; and, in this, their active properties reside. When imperfectly oxygenated, this substance resembles the essential oils in its fragrance and volatility: as a principle, the *caoutchouc* or elastic resin enters into its elementary composition. All the parts of these vegetables, particularly the leaves and roots and seeds, are lactescent; and the name *Euphorbium*, applied to their milk-white juice in ancient times, has not been rejected by modern naturalists. Originally, however, it would represent no more than the products of those kinds of the Euphorbia, which were first discriminated as the sources of a substance possessing energies capable of powerfully affecting the animal economy.

As the palpable qualities of this herb would be discerned soon after its discovery, there is evident probability in the conclusion, that it was administered as a remedy by Juba's physician; and that, on the results proving beneficial, its employment would readily be adopted by others in the treatment of diseases. Thus, during the lapse of twenty years, its existence and efficacy would gradually be revealed to many herbarists and healers, in different regions of the Roman empire; and thus also, the Cilician doctor might have acquired a knowledge and some practical experience of its agency, when he undertook the composition of his far-famed *Philonium*, with the "slayer of Menœtiades" as an effective ingredient.

About thirty years later, and nearly at the same period, the Euphorbium was recognized and described, both physically and botanically, by Dioscorides[*] and Pliny[*] in their esteemed phytographical collections. Subsequently, ever since the days of these naturalists, a due attention has been devoted to the consideration of its virtues, by Galen* in his *Discourse on the Composition of Medicines;* by Oribasius† in his *Medical Collections;* by Ætius of Amida‡ in his *Principles of Pharmacy;* by Alexander of Tralles,|| in his *Prac-*

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[*] See the citations in notes to previous pages of this volume; also *Dioscoride fatto di Greco Italiano, per Fausto da Longiano; Venezia*, 1542; *libro terzo capitolo* 96, *p.* 153—4; and *Pedanii Dioscoridis Anazarbei de Medicinali Materiâ libri sex, Joanne Ruellio Suessionensi interprete; 8vo, Lugduni*, 1552, *p.* 407: this second edition is enlarged by the insertion of annotations and thirty additional figures of plants.

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* Consult his treatise noted on a preceding page, and his whole works edited and illustrated by René Chartier, M.D. in thirteen volumes; *folio, græcé et latiné, Parisiis,* 1639,—a magnificent collection in which the works of Hippocrates are included.

† Oribasii Sardiani *Collectorum Medicinalium libri septemdecim; J. B. Rasario, M.D. interprete; 8vo, Parisiis,* 1555, *p.* 197. His eleventh, twelfth, and thirteenth Books contain the description of *Simples* and their medical properties, from Dioscorides, in alphabetical order.—Oribasius was a native of Sardis; he rose to the high rank of "archiater" to the emperor Julian whose confidence and friendship he deservedly enjoyed. On the death of his sovereign in A.D. 363, the physician had to endure much spiteful and malicious persecution. This was consummated by his banishment beyond the Roman pale, with deprivation of all his honours and property. His fortitude however, and his "useful knowledge" soon gained for him the good-will and veneration of the "Barbarians:" his wonderful cures astonished them, and so overpowered their minds with gratitude that they adored him as the tutelary deity of their nation. Ultimately, he was restored to his country; rewarded with wealth and dignities: secured the imperial favour; and died at the beginning of the fifth century, in the possession of an extraordinary reputation for learning and virtue.

‡ Ætii Amideni *Librorum Medicinalium primi scilicet octo, græcé; folio, Venetiis,* 1534. *Ætii Amideni contractæ ex veteribus medicinæ Tetrabiblos, hoc est XVI Sermones, curante Jano Cornario; folio, Basileæ,* 1542.—Some time near the beginning of the sixth century, Ætius was born at Amida, a Mesopotamian town little noted in history, save in connexion with his name. He studied at the schools of Alexandria, and then entered on active life in that celebrated city. Afterwards, on accepting an invitation to Constantinople, he was advanced to the dignified office of "physician in ordinary" to the emperor Justinian, who also conferred on him an important civil appointment at the imperial court. Ætius enjoys the credit of having been a christian; but, if sincere, his creed was tainted with the freaks of a fantastic credulity. Both in physiology and pathology, he possesses claims to considerable approved originality; and, in being the first to describe the "*tetragnathus,*" a four-jawed venomous spider, he merited the honour of discovering a contribution to medical entomology.

|| Alexandri Tralliani *libri duodecim, græcè et latinè, curâ Joannis Guinterii, M.D. 8vo, Basileæ,* 1549.—Alexander was born at Tralles, about the commencement of the sixth century. His father practised in that place as a physician, and had the happiness of seeing his five sons attain great distinction in their professions. Olympius became eminent as a barrister, Metrodorus as a grammarian, Alexander and Dioscurus as physicians, and Anthemius as an architect: in A.D. 532, he was employed in building the church of Saint Sophia, now a Mahomedan mosque, at Constantinople by the Emperor Justinian its founder. After travelling through the provinces of Gaul and Spain for the improvement of his experience, Alexander made a protracted stay in

tice of Physic; by Paul of Ægina[*] in his *Book of Simples;* by Actuarius[†] in his *System of Prescriptions;* by Messué,[‡] Avicen-

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Tuscany; but, whether he finished his days in Italy or in the land of his forefathers, is a circumstance unnoted in biography: even the date of his decease is unknown.

[*] Pauli Æginetæ *de Re Medicâ libri septem, græcé, curante Hieronymo Gemusæo, M.D. folio, Venetiis,* 1528. Pavli Æginetæ *Medici Opera, interprete Joanne Guinterio, M.D. 8vo, Lugduni,* 1589, *p.* 723, 804.—Paulus acquired the surname Ægineta from his birth-place Ægina, an island in the Ægean sea. The epoch of his career remains undetermined; from varying evidences, it has been referred to the fourth, and to the fifth, and to the eighth century. He spent several years of his youth in studying philosophy and physic, in Greece, Egypt, and other countries; and, on retiring to his native isle, he devoted his cares to the cure of sickness and his leisure to the culture of medical literature. His fame as a "Healer of Diseases" was widely extended: in history, he stands as the patriarch of the tribe of male midwives: his chirurgical precepts intercept the value of some applauded modern discoveries.

[†] Actuarii *de Compositione Medicamentorum tiber, Joanne Ruellio interprete; 12mo, Parisiis,* 1539. *Actuarii Joannis filii Zachariæ Opera; 8vo,* 2 *tomis, Parisiis,*1556.—John the son of Zachariah occupies an honourable position in modern medical literature as "*Actuarius*" the actuary, a designation in peculiar use at the imperial court of Constantinople, where the title had an import similar to that of physician to the sovereign and his family. Much ingenious conjecture has been exercised in attempts by successive biologists to fix the age when he flourished. From adduced reasons, it is thus variously concluded that John the "*actuarius*" lived in the twelfth, or in the thirteenth, or in the fourteenth century: but, passing these respectable speculations, he is usually regarded as the last of the Greek physicians. The incidents of this philosopher's life have escaped from the records of human action, but most of his writings are preserved: they abound with testimonies to the extent and value of ancient science, of which he is a harmonious and systematic expositor.

[‡] Johannis Mesve *Opera, cum complemento et additionibus clarissimi doctoris Francisi de Pedemontio; folio, Venetiis,* 1478. *Opera Omnia, cum annotationibus variis, ab Andreâ Marino, M.D. castigata; folio, Venetiis,* 1562—Jahiah ebn Masouiah, known in the European tongues as John Messué, was born at Khouz near the site of ancient Nineveh, towards the close of the eighth century. He was educated at Bagdad; and, in after life, he enjoyed the friendship of three successive Caliphs and was their physician: these were Haroun al Raschid, Al Mamoun and Motawakkel, the former being the munificent prince whose splendours are displayed in the "Tales of the One Thousand and One Nights." Masouiah excelled the cotemporary philosophers in his profound acquaintance with literature and the sciences: in philology, he was so eminent that the caliphs entrusted to his charge the translation of instructive writings from the Greek, Persian and Syriac languages. Among his physiological and botanical principles, some were original, some approached those of Linnæus nearly, and many will be respected by posterity. He died

na,* Serapion† and other Arabian physicians in their details of experience in treating diseases; by Silvaticus‡ in his celebrated *Pandects;* by Cuba|| in his *Garden of Health;* by Ruelle§ in his *History of*

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in A.D. 855, aged about eighty years: his religious tenets were those of the Nestorian christians.

* *Liber canonis pm^{s}. quē pnceps abohali abinsceni de medicina edidit. translatus a magistro gerhardo cremonensi ī toleto ab arabico in latinum; folio, Patavii,* 1472; *Lib. II in voce* "*Euforbium*" as it stands in the alphabetical order. In this Book, he treats of more than six hundred simple medicinal substances, and these consist chiefly of vegetable products and plants. This edition of Avicenna's Canon contains only the first, second, and fourth books of the original work, but the whole was afterwards translated into Latin by Gerard of Cremona, and published; *folio, Mediolani,* 1473. Notes on Avicenna and Serapion are appended to pp. 41 and 42 of the present volume.

† Serapionis *Liber Aggregatus in Medicinis Simplicibus; translatio Symonis Januensis, interprete Abrahamo Judæo Tortuosiensi, ab Arabico in Latinum; folio, Mediolani,* 1473. *Practica dicta Breviarium: liber de Simplici Medicinâ dictus Circa-Instans; folio, Venetiis,* 1497, 1503, *ab Arabico in Latinum a Gerhardo Cremonensi translatus.*—Gerard was a native of Cremona, in Italy: he studied Arabic at Toledo, in Spain, where he passed the greater part of his life. He was born in A.D. 1114, and died in the seventy-third year of his age, after giving Latin versions of Galen's entire works, and of those published by the most popular Arabian physicians during the twelfth century.

‡ *Liber Pandectarum Mediciné: omnia mediciné simplicia cōtinēs quē ex oībus antiquorum libris aggregauit eximius artiū et mediciné doctor Mattheus Silvaticus: folio, Bononié,* 1480. Six editions, 1474, 1474, 1478, 1478, 1480, 1498, of this remarkable production were published during the first typographical century, and nearly as many afterwards: nevertheless, it is a book "of extreme rarity."—Matthew Silvaticus was patronized by Robert king of the Two Sicilies, who elevated the philosophical doctor to the office of court-physician. His object in composing his *Pandects* was to expound the Greek and Arabian "principles of healing" and thus to facilitate the study of medicine and its collateral branches. He was a native of Mantua: his death took place in A.D. 1340: his early history is not recorded. The early editions of this Treatise are without "pagination," but the author's alphabetical method promotes the ease of reference to particular articles. Under the head "*Euforbium,*" he epitomizes the opinions of Dioscorides, Serapion and Messué on its salutary qualities, and the records by Pliny concerning its discovery and original denomination.

|| *Garten der Gesundheit; folio, Mentz,* 1485. This Herbal was composed by John Cuba, a physician at Mentz: it underwent frequent republications, obtained greatly diversified titles, and passed into versions in the chief European languages. From it were derived the *Hortus Sanitatis; folio, Moguntiæ,* 1492, and the *Grete Herball; folio, London,* 1516: its appearance gave rise to the order of herbalists, and thus became a principal foundation of modern botany. The medicinal properties of "*Euforbium een gomme*" are discussed in Chapter clxx of Cuba's original work.

§ *De Naturâ Stirpium libri tres, Joanne Ruellio authore; folio, Parisiis,* 1536, *Plants;* by Mattioli[*] in his *Commentaries on Ancient Phytography;* by Dodoëns[†], in his botanical *Pemptades;* and by their successors in cultivating the philosophy of vegetable nature.

p. 722—724. In his description of the Euphorbium and its medical uses, Book III, Chapter liii, the author follows Pliny, Dioscorides, Galen, and Paul of Ægina, without attempting to confirm their principles by facts deduced from his own experience.—Jean de la Ruelle, M.D. became Dean of the Medical Faculty in Paris and one of the king's physicians. As an editor and translator, the doctor so far excelled the co-eval scholars as to be designated by them the "*aigle des interprètes.*" He made Latin versions of the works of Dioscorides and Actuarius; he gave correct editions of Hippocrates, Galen, Euclid, Celsus and Pliny the naturalist; and, in approbation of his botanical merits, the *Ruellia* has been made a generic appellation in the Acanthaceous family of plants. This laborious phytologist was born at Soissons in 1474, and died at Paris in 1537, having become a widower and entered into holy orders, a short time before his decease.

[*] Mattioli's first botanical work was published in the vulgar tongue of his country, with the title *Il Dioscoride con gli suoi Discorsi, aggiuntovi il sesto libro degli antidoti contra tutti i veleni; folio, Venezia,* 1544. He afterwards gave it to the world in a Latin version—*Commentarii in sex libros Pedacii Dioscoridis, adjectis quàm plurimis Plantarum et Animalium iconibus; folio, Venetiis,* 1554. Under both these forms, his Commentaries appeared in numerous editions; and, under the superintendence of Dr. Caspar Bauhin, they constituted the chief portion of *Petri Andreæ Matthioli, M.D. Opera quæ extant omnia; folio, Basileæ,* 1598, 1674, *et folio, Venetiis,* 1712, 1744. At Book III, Chapter lxxx, p. 585—6 of the edition 1674, are the description and figure of the Euphorbia, with "considerations" on its discovery, its uses in medicine, and its appellations.—Pietro Andrea Mattioli, M.D. completed his education at the Italian schools; and, through the progress of a lengthened life, he enjoyed the respect which society intuitively concedes to a useful and dignified character. His botanical pursuits were crowned with eminent success, and his writings will remain an enduring memorial of his sagacity and indefatigable exertions. By his own industry and the devotion of his friends, he was enabled to describe many new vegetables; and, out of gratitude to the improvers of his favourite science, he restored the ancient custom of dedicating plants to the honour of illustrious phytologists. Yielding to the advances of old age, he renounced his office of physician at the emperor's court; and, retiring to the vale of Trent, he drew the solace of his declining days from the tranquillity of a rural seclusion. He was born in 1501, and died in 1577 from a seizure of the plague.

[†] *Cruydt Boeck van Rembertus Dodoneus volgens laetse verbetringe, met biivoegsels achter elck capittel, ut verscheyden cruydt beschryvers; folio, Antwerp,* 1553. *Histoire des Plantes, contenant la description des herbes, leurs especes, noms, temperaments et vertus, traduite du bas Allemand* (of Dodonæus) *en François, par Charles de l'Ecluse; avec un discours sur les gommes, liqueurs qui découlent des arbres, et quelques bois, fruits et racines aromatiques; folio, Anvers,* 1557. *A Nievve Herball, or Historie of Plantes;* wherein is contayned the vvhole discourse and perfect description of all sorts of Herbes and Plantes:

Whatever might be the powers ascribed to Euphorbium after its earliest experimental administration as a remedy, there exists some reason for assuming that they would be regarded as real by Pliny and Dioscorides, when engaged in describing the kinds and properties of such herbs as had then been distinctly ascertained. With these writers, the latter being practically acquainted with the qualities of medicinal substances, the energies of this vegetable exudation are held to be available in the treatment of many different maladies ; but, with the same writers, there is always the precaution, that these energies must be guarded in their activity by other ingredients exhibited with them, in combination. For more than eighteen centuries, and with immaterial variations, these views were transmitted through a long succession of naturalists and physicians, until the elementary principles of the Euphorbium were detected by scientific Chemistry, and their effects on the afflicted were disclosed by the sagacity of clinical Observation. Thus, as the drug's efficacy became better known, its employment was gradually discontinued, and it is now altogether without recommendation from any of the "Colleges." As an application for the removal of warts and excrescences, or for the discussion of swellings, it is sometimes preferred by fanciful or eccentric doctors ; but, by the "reformed" rules of the Faculty, the forces of Euphorbium are too violent to be safely entrusted, for any reason, to popular management. On the evidence afforded by extensive observation of the results

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first set foorth in the Almaigne tongue by D. Rembert Dodoens; and nowe first translated out of the French into English, by Henry Lyte, Esquyer; folio, London, 1578. Remberti Dodonæi, M.D. *Stirpium Historiæ Pemptades sex, sive Libri xxx folio, Antverpiæ*, 1583.—Malines was the birth-place of Dr. Rembert Dodoëns; he graduated at Louvain in 1535, and then visited the most eminent of the continental universities; he became physician to two emperors of Germany in succession ; and, by the last of these, he was raised to the dignity of an "aulic councillor." At a late period of life, he obtained the professorship of medicine at Leyden where, in 1585, his decease occurred, in the sixty-seventh year of his age. Dodoëns stood high in the estimation of his cotemporaries, as a physician, a philologist, a rhetorician and a mathematician, but more especially as a phytographer: his celebrity has its memorial in the *Dodonæa*, a febrifuge aperient belonging, in some schemes, to the *Terebintaceous* family of vegetables. Through Lyte's version and Gerarde's selections, the *Pemptades* of Dodoëns contributed essentially, in England, to the development of a taste for botanical investigation.

[The preceding biographical and bibliological sketches have been appended to the present article, for the purpose of facilitating future reference: probably besides, they may not be unacceptable to those who find pleasure in such pursuits.]

produced by Euphorbium, and by varied analysis of its elements, this judgment has been pronounced by experienced physicians—"nous répétons que l'emploi interne de l' Euphorbe doit être banni de la saine médicine, et son usage externe fait avec une extrême prudence."

Melissa *the Princess.*—Mythologists represent the deified Jupiter as having been fostered, amid the perils of his infancy, by the two daughters of Melissus one of the primeval Cretan kings. These princesses are designated Amalthæa and Melissa, in heroic story; and there too, their "philoprogenitive" piety stands recorded with due admiration and reverence. From a generous solicitude respecting the charge of their adoption, the young divinity received ample supplies of milk and honey: he prospered wondrously under the use of this rich as well as luscious aliment,wherein the best qualities of nectar and ambrosia reside, in their exquisite purity: it is the sweetest and the safest panacea,* and one of the surest also for prolonging the joyous vivacity of youth, and for resisting the infirmities which deprive old age of cheerfulness and comfort.

When their nursling had exalted himself to the "sovereignty over gods and men," these compassionate maidens were not left unrequited, for the tenderness of their affection. Amalthæa obtained a bright destiny from the Lord of Olympus himself, but he transferred to Botanists the sublimer duty of originating her sister's immortality; and, from them, she derived the deification which accorded her a shrine in the temple of Vegetable Nature. Thiswise runs their tale in legendary diction. While secluded on the Dictæan mountain with its flowery solitudes, the mysterious babe was entertained with milk of goats by Amalthæa, who discharged the self-assigned office of providing him with this very nutritive beverage; and, in gratitude for the faithfulness of this maternity, the god afterwards bestowed upon her an everlasting inheritance in the heavens, with its symbol *Capricorn* among the zodiacal constellations. Melissa had discovered a method of collecting and purifying honey, for alimental purposes; and, as she participated in her sister's concern for their extraordinary foster-child, she furnished him from her stores with abundance of delicious sustenance. For these acknowledged services, her meed and their memorial were determined by the devotion of naturalists: they consecrated the princess[*] to be queen of the bees by giving her name to the honey-making insect, and they honoured her still farther by enjoining the rule, that Melissa's herb should denominate the balmy vegetable on which the bee is fond of exercising its melliferous industry.

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* Pliny relates an anecdote confirmatory of this observation:—"As for honied wine, the best and the most wholesome is always that which is made of the oldest hard wine: it is very nutritive and breedeth good flesh. Many have held out a long time fresh and lusty in their old age, with the nourishment of honied wine alone without any other food. Of this, we have the notable example of Pollio Romulus who, being above an hundred years old, bare his age passing well: at this the Emperor Augustus marvelled much; and, being upon a time a guest at Pollio's house, he asked him what means he employed most so to maintain that fresh vigour both of body and mind. The reply was, *intus mulso, foris oleo,* by using honied wine within and oil without."—Dr. Holland's Pliny, *Book XXII, chap. xxii, Vol. II, p.* 136.

MELISSA *the Plant.*—This is the Balm, one of the *labiated* family of vegetables, "a most natural order having the herbage usually aromatic, often bitter, always harmless." Most of the primitive phytologists, both poetical and medical, evince an acquaintance with "the fragrant Balm that lures the bee," in that they severally distinguish the plant by some appropriate term which commemorates the fair one's fame, in whose honour the insect and the flower were first denominated. From the ancients, a knowledge of the plant and its reputed properties was transmitted to the Arabian doctors; and, through their compositions, it descended successively to the modern herbalists and the physicians, who generally agree in communicating information as the fruit of varied experience, often less actual however than imaginary.

Balm with its citron-scented blossoms, has been immemorially considered the source of a fragrant principle peculiarly agreeable to the bee, and of a cordial energy adapted, by exhilarating the "heart of man," to relieve his mind from the miseries of nervousness and melancholy. With the other elements of his pastoral illustrations, Theocritus[†] introduces the "odoriferous balm" with its buds ever-grateful to the bee; and for its being an ingredient in his antidote to poisons and the venom of serpents, Nicander[‡] commends the "herb which hinds and herdsmen call Μελιφυλλον, Μελιτταινα, and Μελισσοϐοτον because the bees, allured by its honied fragrance, are wont to buzz around its blossoms." Amid the excellencies that adorn the delightful disquisition of Virgil* on the *admiranda levium spectacula rerum*, " with their heavenly honey and ambrosial dews," his picture of the unforgotten artifices employed immemorially by the peasants for the allurement of swarming bees to their destined hives, is extremely instructive and exceedingly beautiful. Into this, the Mellifluous Bard introduces the charm of Balm ; and thus it stands, in his descriptive song :—

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[*] By every appearance, the appellation Μελισσα *the bee,* and Μελισσοφυλλον *the bee-herb, Melissa's plant,* derived their originals from that of the Cretan princess, on account of her discovery of honey and its sources: from her own name being the same as her father's in the feminine form, an additional testimony may be entertained in favour of this construction.

[†] *Theocriti, Simmiæ, Moschi, Bionis et Musæi quæ extant, cum notis; accedunt Theognidis, Phocylidis, Pythagoræ, Solonis, aliorumque poemata gnomica; græcè et latinè;* 8vo, *Parisiis,* 1627.—Theocritus was a Sicilian, and flourished about the end of the third century before the christian era: his works were first printed in the original; *folio, Mediolini,* 1480: in his Idyls δ & ε, under the term Μελιτεια, he speaks of the *Balm* and its fragrant emanations.

[‡] *Nicandri Theriaca et Alexipharmaca, græcè et latinè, interprete Jo. Gorræo,*

> "Lo ! from their cells when swarms through ether stream,
> And float at noon along the liquid beam,
> And on the breeze that rings beneath their flight,
> Draw out in darkling clouds their airy height,
> Mark, where they seek dark grove or crystal spring,
> There the bruis'd *Balm* and wild cerinthé fling ;
> And tinklings raise, till echo rings around,
> And the great Mother's clashing cymbals sound :
> Soon shall they haunt the medicated seat,
> And to their chamber's inmost cells retreat."

M.D. apud ejusdem Gorræi Opera ; folio, Parisiis, 1622, *pp.* 9, 11, 27, 44. *Nicandri Theriaca et Alexipharmaca, græcé, latiné, et italicé, curante A. M. Bandinio ;* 8*vo, Florentiæ*, 1764*; pp.* 83, 97, 163, 186.—Nicander of Colophon was a grammarian and physician, and ultimately a priest of Apollo, at Claros where that god had a famous oracle. In his *Theriaca*, the poet describes the venomous animals, and the remedies for the effects of their bites; and, in his *Alexipharmaca*, he treats of poisons and their antidotes. His poems were first printed*; folio, græcé, Venetiis*, 1499: they afterwards passed into a Latin version by Adam Lonicer ; 4*to*, *Coloniæ*, 1531 ; into another by Jean de Gorris, M.D. 8*vo*, *Parisiis*, 1549 ; into another by James P. Estevé, M.D. 8*vo. Valentiæ*, 1552; and into another by Euricius Cordus, M.D. 8*vo*, *Francof. ad Mænum*, 1552. They were translated under the name of Cordus, into German ; 8*vo*, *Marburgh*, 1532 ; and Jaques Grevin, M.D. rendered them into French verse ; 4*to*, *Anvers*, 1568.—At verse 677 of the *Theriaca*, the word μελλισσοϐοτοιο is adopted by Nicander, for the sake of his metre : the Nicandra, a South American bitter, belonging to the *Gentianæan* family of vegetables, is dedicated to his memory.

* Virgil describes the proceedings usually adopted for the security of swarming bees, in his fourth Georgic, verses 58—66. See the English versions of Martyn, Warton, Stawell and Sotheby, with their notes and illustrations. Melisphyllum is used in this description instead of *Melissophyllum*, by contraction and from metrical necessity. Cerinthé is the honey-wort, " an herb in which the bees do take great delight, because of the sweetness of its flowers."—The Magna Mater, *the Great Mother*, called also Bona Dea, was Cybele the mother of the gods, at whose rites her priests used to make loud noises with brazen drums, cymbals, and other high-sounding instruments.

Dioscorides treats of the Balm with his accustomed brevity. He recommends a decoction or vinous infusion of the herb as a pleasant remedy for tooth-ache, and as a good wash for bracing the mouth and gums. Into the subject, however, Pliny[*] entered more largely: this is one of his observations:—"Touching Baulm, if bee-hives be rubbed all ouer and besmeared with the juice thereof, the bees will neuer away, for there is not a floure whereof they be more desirous and faine, than of it: and, in truth, looke in what garden there groweth abundance of this hearbe, the bees there when they swarme, will be soone intreated to tarie and not be hastie to wander far abroad. The Baulm is a most present remedy not onlie against their stings, but also of wespes, spiders, and scorpions." Modern bee-breeders need not despise these aphorisms, because they have become venerable for their antiquity.

Serapion ascribes important qualities to this vegetable. It is the property of Balm, he says,[†] to cause the mind and heart to become merry: to revive those who are fainting, and to prevent fits of swooning, especially such as occur during sleep and stop the motions of the pulse: to drive away all troublesome cares and thoughts: and to alleviate the oppressive feelings of peevishness, discontent and mental depression. This pathetic view of the Balm's enlivening influences enters into Avicenna's "spiritual creed," without hesitation or disconfidence; and, reckoning on the universality of its truth, the active philanthropist might experience a gladdening comfort in expatiating on the advantages to be derived from the resource of aromatizing apartments with a balmy steam, as the most delicious antidote to the *ennui* which necessarily preys on the victims of idleness and frivolity. From the same eloquent physician,* come the additional doctrines; that Balm solaces the soul of man, and invigorates his vital energies, with its sweetness of smell, austereness of taste, and tenuity of parts; that, with these qualities also, it strengthens the inward bowels and organs, and thus facilitates the processes of digestion; that it removes the megrim and fulness of the brain; and that it possesses a power to expel melancholy vapours from the spirits and the blood which permeate the heart and arteries. These edifying revelations stand forth in the *Grete Herball*:† beneath a prime figure of the plant, the simpler says that "the Melisse hath grete vertu to waste and sprede humours, and that it is good agaynst hote and venymous apostumes, medled with grece and layde to them, and agaynst all aches yf it be layde to the sore placen ix dayes. The wyne that Melisse is sodē in is good to kepe one fro swownynge yf the cause be colde: yf it be sodē in wyne and oyle, and layde to boyles, it rypeth and softeneth them, and spredeth the hardnesse of the lyuer and mylte." Balm moreover bears the credit of a generous All-heal, in the *Garden of Health*‡ where Virgil's precepts for the guidance of bee-charming are approved and recommended. "When their hiues are rubbed with Balme," the herbalist avers, "it keepeth the bees together and causeth others to come to them. Seethe Balme," he adds, "in white wine, and drinke it iii or iiii mornings together, to purge the breast, to helpe the shortnesse of winde, to comfort the heart, to driue away dumpish heauinesse, to helpe the falling sicknesse and all other diseases."

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[*] Dr. Holland's Pliny's *Natural History of the World;* Book XXI, Chap. xx, Vol. ii, p. 106.

[†] John Serapion: *Insignium Medicorum Volumen in quo continentur—Jo. Serapionis, Arabis, de Simplicibus Medicinis opus præclarum et ingens;—Averrhois de Iisdem liber eximius;—Rhazis filii Zachariæ de Eisdem opusculum perutile;—Incerti Autoris de Centaurâ libellus, hactenus Galeno inscriptus;—Dictionum Arabicarum juxta atque Latinarum index valde necessarius: in quorum emendatâ excusione nequid omnino desideraretur, Ottonis Brunfelsii singulari fide et diligentiâ cautum est; folio, Argentorati*, 1531.—Otto Brunfels, M.D. was a laborious and admirable scholar. In early life, he studied philosophy and theology; and, in due course, he became a monk. Afterwards he adopted the principles of the Protestant Reformers, and succeeded in making numerous converts to their doctrines. Finding his health incapable of sustaining the toils of his position, he renounced divinity; and, on graduating in medicine, he settled at Berne as a physician. He died in that city in 1534, leaving many excellent writings, the fruits of his extraordinary erudition and industry. His *Iatron*, *Onomasticon*, and *Herbarum Icones* are esteemed productions, both for their intrinsic value and for the importance conferred upon them as being "scarce books." Their author's celebrity is commemorated by the *Brunfelsia*, a generic appellation in the order Solaneæ which, from their fœtid and narcotic energy, were termed by Linnæus the *Luridæ* or gloomy tribe of plants.

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* Avicenna; Ebn-Sina; he was surnamed *Scheikh-Reyes*, the prince of physicians. One of his tracts is entitled, *De Corde ejusque Facultatibus libellus, e traductione J. B. Bruyerini, M.D. 8vo, Lugduni*, 1559. "Auicenne sayth, that *hasyll nuttes increase the brayne.*" Now, this aphorism being true, it offers an instructive suggestion to the guardians of weaklings with light heads and little brains. When a tiny brain occasions imbecility, let its victim be regaled often and freely with *Hasyll-Nuttes;* and, in due time, he may have a big head with a large share of cleverness and virtue.

† *The Grete Herball;* Chapter ccxci; folio, London, 1526.

‡ William Langham, Practitioner in Physick:—*The Garden of Health,* conteyning the sundry rare and hidden vertues and properties of all kindes of Simples and Plants; 4to, London, 1579; p. 60. Here, receipts are given for the preparation of balme-tea, balme-ale and balme-wine, with instructions for using them effectually in the treatment of diseases.

Were these foregoing pictures of ancient wisdom admitted to a fair consideration, would they not prove inducements for the medical squires to renounce their rings and their segars and their hunters, for the purpose of devoting the refinements of their science to the culture of Balm and its Bees, as a pleasant pathway to Fortune —the pole-star of pure utilitarian philosophy? That honourable industry might attain a prize so coveted, and its happy consequences has been exemplified on authority delivered by the elder sages: that such a result would be certain from the powers of Balm in the "cure of all diseases," comes with high claims for a trial under the persuasive sanction of modern experience. Thus, by two eloquent pharmacological associates,* it is stated that Balm has its fragrance increased by the process of drying; whereas, with most other herbs, their odour is extinguished by desiccation. This plant imparts a bitter, somewhat hot, aromatic taste: its qualities are exhilarating, tonic, and carminative: it operates beneficially in hypochondriacal and dyspeptic affections, in low spirits proceeding from defective energy of the brain, and in complaints attended with derangement of the memory. These physicians themselves prescribe for apathetic fat old gentlemen, an infusion of balm, in liberal morning draughts; and this usually determines good effects when assisted with moderate exercise. This medicine also, they affirm from observation of its influences, exerts a benign and restorative efficacy in strengthening the constitution when broken by palsy, apoplexy, erratic gout, atrophy, chronic catarrh, rheumatic fever, and nervous excitement. Balm is a plant, they conclude, which naturally possesses a susceptibility of manifold applications—in tea, cakes, powder, syrup, beer, wine and essence—and it ought to be more generally administered, in medicine.—Let the Balm, then, be tended wisely and multiplied extensively by the prudent Herbalist, and he may derive a delicious and enlivening recompense from the fruits of his labour; for, as he may see, in the Melissa's essence reside the high-prized sources of health and comfort and longevity.

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* F. V. Merat, M. D. and A. J. De Lens, M.D.—*Dictionnaire Universel de Matière Médicale et de Thérapeutique Générale; Tome iv, p. 266: 8vo, 4 tomes, à Paris, M.DCCC.XXXII.*

AN ESSAY ON THE NATIONAL CHARACTER OF THE ROMANS.

In a paper on the National Character of the Romans, it will be necessary, in the first place, to make a few brief observations on the origin and early history of their celebrated commonwealth.

It is not here intended to offer any remarks upon the subject of Roman history, but simply to write upon the national character of the people. The Romans may be said to have been the inventors of the science of politics—to have first laid down practical rules and maxims for national exertions—and to have set out, even when they were but a petty state, upon a system of which the conquest of the world was only the necessary consequence. In the present Essay, however, it is not exactly my business to concern myself with these matters.

It has been admirably observed by a modern historian, that "numberless are the events and the changes through which the Romans passed from one extreme to the opposite: vast destinies, mighty deeds, and men who were worthy to wield a gigantic power, have preserved the memory of much, in the history of Rome, even during the most ignorant ages. But, in the early part of it, Poetry has drawn her party-coloured veil over historical truth: afterwards vain fictions, still more frequently than popular legends, under various forms, are mixed up, within the outlines of dry chronicles, with the scanty results collected by one or two genuine historians from authentic sources. Often they are irreconcilable and easily discovered; but sometimes there is a deceitful congruity."* There can, indeed, be no doubt but, in the early history of Rome, poetry has done much, national vanity much, and individual credulity much, to embroider the plain fabric of truth with no inconsiderable proportion of embellishment. Still, however, from the nature of the pattern we may, perhaps, form an opinion as to the taste, not only of the embroiderers, but also of the public or community for whom their wares were originally fashioned. In other words, even if Niebuhr is perfectly correct, throughout the whole of those lectures in which he makes such unmerciful use of his pruning hook, yet from the character of the embellishments, or if you like it better, inventions, we may certainly form an opinion as to those qualities which were admired on the one hand and detested upon the other, by the Roman people.

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* Hall and Thirlwall's *Niebuhr*, Vol. I, p. 1.

If, for example, the wholy story of Mutius Scævola's visit to the tent of Porsenna were admitted to be a fiction, still it would, at all events, be certain that, at Rome, an exploit of such a character, whether it were in reality deserving of praise or not, would, at the time it was invented, have met with the highest applause. If the escape of Clœlia at the head of the female hostages and the honourable conduct of the consul Lartius in compelling them to return had no existence in truth, still there can be no doubt but that the Romans, at the period when this became a part of their history, were of a character to admire at once the dashing courage of the heroine, and the high-toned probity of the public officer.

The story, also, of Camillus, and of the treatment he bestowed upon the felon school-master of the Falisci, is another exquisitely beautiful trait in the national character and—finding, as we do, so little to admire—one upon which it is delightful to repose. It may be more or less established, for nothing, we are told, before the destruction of the archives in the Gallic war, is perfectly authentic. But the very fact of its being related in the way we find it, is sufficient to prove that, in those primitive ages, the republics of ancient Italy had a high notion of honour and a just estimate of what is truly noble.

At the same time, do not let us adopt a too elevated opinion of their ordinary conduct. It does not follow that all their actions were equally virtuous and noble, because, on this single occasion, they bestowed their unqualified praise on the behaviour of Camillus. Let us take the evidence thus afforded us exactly for what it is worth, and nothing more. It shows, indeed, that they were able to appreciate a virtuous action, and that is something—nay, a good deal—but it does not follow that the heroic conduct of Camillus was an average example, any more than that of the culprit school-master. If, indeed, it had, Camillus himself would not have been so speedily banished by his ungrateful countrymen.

Another anecdote of ancient days may, perhaps, illustrate, in some slight degree, this matter, and it may be related here, although to many readers it is doubtless familiar. Once, upon a time, we are told, when the Greeks were assembled at the celebration of the Olympic Games, and when the visitors from all the various states were seated in their proper places, there entered a venerable old man, who could not find a seat and who walked forward for some time, vainly seeking a bench upon which to rest himself. At length, however, he approached the quarter occupied by the Spartans, and immediately all the younger men arose and offered him the choice of their seats. We are informed that, upon this, there was a sudden exclamation of applause throughout the whole assembly; and it might have been imagined that the Greeks in general were the best conducted persons in the world. But the old man, it appears, drew a much juster conclusion; for he remarked that "all the Grecians knew what was proper and becoming—but the Spartans alone practised it."

Perhaps it may not be amiss to observe in this place, that Numa, the legislator of Rome, was a philosopher among the Sabines; and that this people are commonly thought to have had no small acquaintance with the laws of Lycurgus. Filtered, however, through Numa's more philosophic mind, the Italian legislation was certainly an improvement on the severity of the Lacedemonian system.

To return: Rome was indeed destined to run a proud and triumphant career. If we cast a hasty glance over the whole history of ancient times, from the invention of letters to that great era of improvement the introduction of a pure and revealed religion, we shall find that as the sea receives into its vast basin the tributary streams that intersect the earth by which it is surrounded, so the history of Rome, like her own Mediterranean, swallows up that of every other ancient people, with whom her fortunes came in contact.

Of the history of Rome we have, alone, any definite idea. We see her commencing as a petty town, with a few surrounding acres for a territory: we see, also, her decline and approaching ruin, till, like a colossal image overthrown by its own weight, she falls in many vast and long-enduring fragments—for each became in itself a mighty kingdom. The history of Rome, therefore, alone is a complete work: it has a beginning, a middle, and an end: whilst of every other people the questions to be answered are little more than these, namely—from whence they sprung? what they did or produced? and at what period they became a part of the Roman empire? Need it be added, that we are here speaking only of those nations which possess any authentic annals?

The history of Rome, I repeat, is one connected book: whilst those of Babylon and Persia, of Egypt, and even Greece, are only episodes. We must not, however, imagine the authors and compilers of Roman history to have known all this. It would, indeed, be a curious inquiry, if we could ascertain what was the real impulsive principle which induced the celebrated historians of old to commence their labours, having no, or scarcely any, previous model before them. If, however, there are any historians amongst them, into whose characters and feelings their own writings give us any insight whatever, these are undoubtedly Livy and Tacitus. Every page of their histories bears the most conclusive testimony to their own nobility of feeling, to their love of liberty, their attachment to the free institutions of their country. Yet the candid manner in which they relate the errors of democracy, the oligarchy, and the emperors are equally apparent. Livy, however, wrote when the liberties of Rome had no longer any existence; and Tacitus was born under the imperial despotism: neither of these authors, therefore, had ever breathed the air of freedom, or known anything of free institutions except merely as things that once had been. Livy was a bright ornament of the Augustan age; and was born about the time of the great battle of Philippi. Tacitus was, perhaps, the last of all the truly classical writers of Rome. They knew nothing, therefore, except by contrast, of Roman freedom; and yet these are the men who have left us the most valuable histories of their native land. It was because the Roman spirit so long survived the commonwealth.

The reasons that influenced the earlier and the greater of these historians are thus divided by the acute and indefatigable Niebuhr: "Livy wrote," observes that author, "because nature had endowed him not only with an admirable talent for narration, but also with a highly brilliant gift of seizing upon what is characteristic in humanity. He wanted only the command of, or rather, perhaps, a delight in metrical arrangement, to have had the genius of the poet." And surely this it is to write under the spontaneous inspiration of a natural genius: this it is to be an author of the first and most elevated rank!

"Livy wrote," continues Niebuhr, "equally without doubt or conviction, but with all the spirit of the marvellous and heroic ages. In domestic politics he had prepossessions which coloured, slightly, perhaps, his writings; although party spirit was already burnt out under the extinguisher applied by the imperial despotism. At the same time, we can scarcely believe Livy to have been a very laborious enquirer. Of distant countries he seems to have adopted the first account that came to hand. And surely, in his own time, amongst the ancient semi-fabulous tales which formed the materials —half poetical, half historical—of his Decades, he might, by more pains-taking, have furnished something more valuable, because more authentic."

In what spirit, then, did he compose his work? To my own taste, the question is best answered by the writer on Roman history whom I have already quoted:—"His wish was to forget the degeneracy of his own age whilst reviving the recollection of what had been glorious and excellent in former times. And the very security in which the weary world was beginning to breathe again (under the mild despotism of Augustus) could not but comfort him under his melancholy when he was delineating the fearful events of the civil wars. He desired to teach his countrymen to know and to admire the deeds of their ancestors, which had either been forgotten or were heard of only from unconnected narratives: and he bestowed upon their literature a colossal master-work, with which the Greeks have nothing whatever to compare, nor can any modern nation place a parallel work beside it. No loss that has befallen us, in Roman literature, is equal to that of the works of Livy which have perished."

Cicero distinctly gives the pre-eminence to the Greek historians: for which, indeed, he is strongly censured by Lord Bolingbroke, who, singular to say, forgets that Livy was no more than an infant, and Tacitus unborn, when the great light of Roman eloquence and philosophy was quenched under the second triumvirate. Had, however, Cicero lived, he would have had less to regret in the literature of his own language and nation.

It is to Livy, therefore, we must particularly apply for information as to the Roman character. But before we proceed to this inquiry, it will be requisite to say a few words upon the foundation of Rome and the origin of the people who afterwards arrived at so high a pitch of prosperity and splendour.

It is difficult to make anything of the contradictory fables connected with the foundation of Rome; but its first builders seem to have been a military body composed of restless spirits from other states, yet independent of all and unconnected exactly with any. At the same time we must confess their origin, so far as we are able to judge of it, was anything rather than reputable.

It would seem that Romulus had arrived at a considerable degree of power, as the leader of a new and motley collection of not by any means respectable persons. Very early befel the rape of the Sabine women, an act of violence by which he was enabled to procure wives for at least the more valuable and decent of his companions. By this, a war was excited, which, however, by the address and affection of the women themselves, who had become attached to their lords and masters—a circumstance, by the bye, which testifies highly in favour of both parties—was brought to an amicable arrangement, and an incorporation took place between the new people, and a considerable accession of their Sabine connexions. The fortune of Romulus again prevailed, and he became sole king over the united nation. The fruits of his many and successful wars were matured by the long and peaceful reign of Numa, a sovereign of the most consummate address and wisdom.

The effect of this prince's reign of forty peaceable years, was the firm establishment of a system of laws and customs, in which Religion—it is true of a superstitious character, but still one which exerted an amazing influence on the minds of the people—took a deep root in the still youthful state. It continued for a very extended period to exercise an almost absolute sway over the national character. Of this we have an example in Lucius Albinus, who, during his hasty flight from Rome, on the advance of the victorious Gauls, actually turned his own family and goods out of his carts, in order to take in the vestal virgins with the utensils employed in the sacred offices of religion. Albinus conveyed them in safety to a city called Cære, and from the circumstance of their continuing their religious customs in exile was derived, as we are taught to believe, the word " ceremony," so frequently used in every nation.

A succession of warlike kings extended the territory of Rome, whilst a military system amalgamated itself with the national superstition; but in a proportion, we may observe, much better fitted for practical and social purposes than that which afterwards lent so much force to the Saracen dynasty, under the Mahometan imposture. Proceeding gradually to the conquest of Italy, all the other tribes by which that peninsula was occupied merged at length in the name and designation of " Roman." It is remarkable that all the great masters of Poetry and Eloquence, in the Latin language, with the single exception of Julius Cæsar, were sprung from some other state or tribe than that of Rome: yet so exclusively Roman is the whole spirit of their literature that there is scarcely a vestige of the history of any one of the other states, excepting as it is reflected by that of Rome. The earlier glories, even of Etruria—a wealthy nation, and one which vied with Greece in the arts, even in her golden days—is entirely lost, and every thing in the language of Italy is Roman.

The gradual incorporation of state after state continued, until Italy was one united whole: and as long as there was a pressure from without—as long as Rome had enemies to contend with of sufficient force and power to stimulate her national spirit of patriotism—so long she was at peace within her own bosom—so long she was not only formidable to her enemies, but her sons preserved the strong and leading features of their national character—so long, also, there was a tolerable security of property and person. It was only when she grew all-powerful that her own ambitious magnates, guiding—as superior talents and intelligence ever must—the mass of her democracy, wrought her so much evil. It was not long, however, before the same commonwealth which had consecrated the devotion of the Decii and held in veneration the virtues of the poor and incorruptible Fabricius, not only nursed in her bosom, but long continued to tolerate the political as well as private profligacy of a Cataline, and bowed in abject terror before the alternately successful bloodhounds Marius and Sylla. It was not much longer before the descendants of that people who had banished the heroic Lucullus for only presuming to yoke unto his triumphal chariot four milk-white steeds, submitted to a slavery fully as base and unqualified as any that had ever obtained in the regions of Eastern despotism, and under a line of emperors certainly amongst the most contemptible of their species.

What shall we say, then, was the national character of the Romans? We can only say that it was very different at different periods of their history. Let us compare the stern and uncompromising sense of public duty displayed by Junius Brutus, with the venality of the Jugurthine negociations. Let us compare the severe discipline of Manlius Torquatus with the revolt of Cæsar against the senate: and with the conspiracy of Cataline against every class and department of the state. In the Gallic war the people were still so deeply impressed with a sense of justice and religion, that it was debated whether or not Fabius ought to be given up to the barbarians, as a victim justly due to those deities who presided over the laws of nations; since, having been sent as ambassador, he had drawn his sword in battle. But how shortly afterwards had the Romans become the most unscrupulous of mankind, where the interest of their own country was concerned.

The following is the testimony borne by Polybius, a Greek, to the character of the Romans. He was the friend of Scipio, and wrote about the time of the second Punic war, or between that and the third. "They most inviolably keep their word," says Polybius, "without being obliged to it by bail, witness, or oath: whereas, ten securities, twenty promises, and twice as many witnesses cannot hinder the faithless Greeks from attempting to deceive and disappoint you." It was not long, however, before the Romans forfeited the title to any such eulogium as this.

Certainly there must have been an entire change in their national character, between the age of Papirius and Camillus, of Fabricius and Curius, and that when Cataline and his accomplices disgraced the annals of Rome. Let us picture to ourselves a Roman senate, refusing to quit their seats on a mistaken but determined principle of honour when the town was actually taken by the Gauls, and when to remain was martyrdom. Let us imagine, at another period of the same republic, the senate on their seats, and listening in abject terror to the cries of thousands of citizens who were in the act of being murdered by the rampant vengeance of Sylla! In the one example they sacrificed their lives to a mistaken but truly sincere spirit of national honour: in the other they were too happy in purchasing their personal safety by a tacit, trembling acquiescence in scenes of the most lawless and horrible butchery.

Connected with this part of the subject, an observation may be made which is, in my opinion, of great weight and importance. Whilst the Roman character preserved its stern, but nevertheless noble elevation, the women were treated with a degree of respect of which we have but few parallels, if any, in ancient history. With the adoption of the oriental luxuries, this system was broken through; and I do not scruple to assign it as a cause, no less than as an effect, of the rapid demoralization of the Romans.

The women, at the moment when Romulus and the Sabines were about to sheath their swords in the hearts of each other, had saved Rome and reconciled their new to their old connexions. Thenceforward—as the tradition is—the matrons were esteemed to be an order of the most honourable kind. When the people were divided into three tribes, and each of these into ten curies, the latter were named after their respective matrons. And moreover, it may be interesting to some to know, that a married lady could never be compelled by her husband to do any household drudgery, if she did not like it. Spinning and weaving were supposed to be the proper departments of a matron. Every man was expected to give the precedence to a married woman: to insult her was a public offence. When the Roman had a right to sell even his children, to dispose in this manner of his wife was held a monstrous crime. There were only three legal grounds of divorce—adultery, attempts to poison his children, or counterfeiting her husband's keys—which is a singular equalling of what certainly appear to be very different offences. If a husband put his wife away for any other reason, she had certain exceedingly valuable claims upon his property. And it is remarkable, that the levity which crept in, at a later period, respecting these regulations, should have been the first beginning of that corruption, the progress of which was so extremely rapid. It is certain, however, from all experience, that to weaken the sanctity of the marriage tie is to go very far towards the poisoning of all the springs of social virtue.

The national character was entirely changed between the age of Pyrrhus and that of Sylla; what, therefore, was the cause of this transition? In the first period Rome was weak in numbers; but she was strong in the heroism of her children. The sway of her commonwealth extended not over many distant provinces: on the contrary, the loss of a battle or two placed her very capital in danger of being taken. Her sons were, at this time, poor; but they attached little importance to wealth: witness the examples of Regulus, of Curius, and of Cincinnatus; and they felt themselves invincible in what they regarded as the fortunes of their city, but which, in fact, was their own self-denying virtue. Their superstition, however, supported their enthusiasm, and was, in its turn, the cause of their success; for it was chiefly this which preserved their virtue in its strict and uncompromising severity. When, however, this healthful circulation was impeded in the body politic, the fortitude and virtue of ancient Rome were lost and forfeited.

At the second period, Rome had become saturated with wealth; but it was not the wealth brought into a country by mercantile enterprise—an occupation which expands the heart and mind, brings men into contact with their own species, and convinces them that one rank is indispensably necessary to another. It was not the wealth produced by active and laborious industry, under the guidance of intelligence and ingenuity. It was wealth won alone by war and plunder; and as well might we expect the pirate or the bandit to sit down and enjoy his ill-obtained booty with the sobriety and discretion of an industrious artizan, as that wealth, won like that of Rome, should have failed to demoralize her people!

The Romans were now become too rich and luxurious to continue what they had formerly been, a nation of soldiers. A few soaring spirits, it is true, forsook luxury for the superior attractions of ambition. A universal genius, like Cæsar's, united every thing within itself, and shone in all alike superior. He was at once the first in literature, the first in arms, and the first in dissipation: we must not, however, forget that the age of Cæsar was also the age of Cataline: that his virtues were his own—his vices those of the times in which he lived.

With the monster Cataline, whose name I have just mentioned, it is, indeed, wonderful to think how many of the noble and dignified in Rome were united! Even although his avowed aim and object were the downfall of their country; yet because, at this price, they hoped to purchase revenge against their enemies, an unrestrained license to plunder in a wealthy community, and an unlimited indulgence of every appetite and passion, many of the noblest of this degenerated city had their blood shed in that abominable conspiracy, by the hand of the public executioner! Evil, indeed, must have been, and must ever be, the aspect of affairs in that state where senators and public officers can unite with one denounced, in the most solemn manner, as the enemy of their country, simply for the accomplishment of their own private interest, or their own base and misplaced ambition!

The Romans, I repeat, though theirs was still a military state, were no longer what they had been—a nation of soldiers. Their legions were probably officered still, though not entirely so, by Italians; but the ranks were recruited from the athletic natives of many a conquered country. It was with an army trained in Roman discipline, but probably recruited in Gaul, that Cæsar fought his way to absolute power and dominion. The pay, the immunities, the license, and the *esprit du corps* of the Roman army, kept up its discipline, and therefore its valour, for ages and centuries after the liberties of the commonwealth had been offered upon the suppliant knees of the degenerate senate to every one, in turn, of the many successful adventurers who held the sword of victory suspended over the heads of its degraded members.

But from the period of the fall of Carthage the demoralization of Rome was rapidly advancing. The Jugurthan war was another event which proves the celerity of her decay. It is notorious that Jugurtha bribed the executive government of Rome, patricians as well as plebians, to make a most iniquitous decree in his own favour and to the prejudice of the grandsons of Masinissa, the friend of Scipio and the faithful ally of Rome. It is Sallust who, relating the very words of Jugurtha upon that occasion, has stamped this indelible disgrace upon his country:—"O Rome!" exclaimed the African, as he turned his back upon the degenerate city of Fabricius, "how readily wouldst thou sell thyself, if there were only a purchaser rich enough to buy thee!" Can we believe this to be the same city in which the bribes of Pyrrhus had been scorned, and where the consul Curius had asked the ambassadors of the Samnites —scarcely raising his eyes from the turnips he was peeling for his supper—"what could the use of money be to one contented with such humble fare?"

The conquest of Spain, followed by that of Carthage, had introduced, not only wealth, but that which is really the poisonous characteristic of wealth—a love for it—into Rome. Gold was now their God, and they would do anything to obtain it. It is not sufficient, in order to corrupt the heart of man, that he should become rich: on the contrary, many have passed the ordeal, and their characters have justly risen from the trial. But only let a man be rich and make his riches an idol, he is indeed corrupted beyond all hope for the future. The sentiment is curiously expressed in the mad old play, *Hurtothrumbo*, wherein one of the fictitious worthies, Dologo Delmo by name, curses an enemy to the following effect:—"Lay on him the honey curse, the gilded pill, the bitter blessing, that, whilst it satisfies desire, infects the mind. Give him riches and make him love them."

The conquest of Spain, I repeat, with those of Sicily and Carthage, converted Rome from a poor state into a very rich one; and thus far tended to the demoralization of the national manners. Her eastern conquests completed the work of evil, for they not only increased her riches beyond every limit of moderation, but they introduced, likewise, every possible variety of vice and immorality. From this time we may date the complete dissolution of the old Roman character: nay, it would even appear as if the harder and sterner features which had distinguished her pristine fortitude and virtue served in this her second period to unite the most savage cruelty to every kind of vice, and thus still further to disgrace her.

In speaking, however, of the Roman character, there is one particular and independent testimony borne to it, which I am not aware that any historian of modern times has noticed. It occurs in or about what we may properly entitle the transition stage; that is to say, whilst Rome was in the act of prosecuting her Eastern conquests, or about a century and a half before the Christian era. I am referring to the 8th chapter of the Book of Maccabees, and the passage runs as follows:—"Now Judas had heard of the fame of the Romans, that they were mighty and valiant men and such as would lovingly accept all that joined themselves unto them, and make a league of amity with all that came unto them, and that they were men of great valour. It was told him also of their wars and noble acts which they had done amongst the Galatians. And how they had conquered them and brought them under tribute; and what they had done in the country of Spain, for the winning of the mines of the silver and gold which is there; and that by their *policy* and *patience* they had conquered all the place, though it were very far from them; and the kings, also, that came against them from the uttermost parts of the earth till they had discomfited them and given them a great overthrow, so that the rest did give them tribute every year."

The narrative proceeds to state, in a still more circumstantial manner, their conquests in Asia Minor, Armenia, and Syria, as well as Greece; particularly specifying that the last named people were become servants to the Romans. After this it proceeds in the following language:—"But with their friends and such as relied upon them, they kept amity: and that they had conquered kingdoms both far and near, insomuch as all who heard of their name were afraid of them. Also, that whom they would help to a kingdom, they reigned; and whom again they would they displaced. Finally, that they were greatly exalted. Yet, for all this, none of them wore a crown or were clothed in purple, to be magnified thereby. Moreover, how they had made for themselves a senate house, wherein three hundred and twenty men sat in council daily, alway consulting for the people, to the end that they might be well ordered. And that they committed their government to one man every year, who ruled over all their country, and that all were obedient to that one, and that there was neither envy nor emulation among them."

In consequence of this flattering report, painted we must confess *couleur de rose*, yet not unlike in its general resemblance, the Jewish hero sent ambassadors to the great empress of the West, and entered into a close league with the Romans against Antiochus, the common enemy. If, however, we take this picture, allowing any fair degree of discount, and assume it to represent the position which the Romans occupied in the estimation of the nations by whom they were surrounded, we must confess that, up to this period—which is before the third Punic war—the virtue for which they were at first remarkable was not yet forfeited. How shortly afterwards they became corrupted, let Jugurtha, Marius, and Sylla—let the triumvirates—let Catiline—in short, let the pages of Sallust and Cicero, as well as Livy, testify!

In the later ages of Roman conquest, we find them still invincible, from their superior science in the art of war. We find the valour of their legions sweeping in the full career of victory towards the East, and overcoming also the hardier natives of the North in almost every encounter. But in their character and manners, we now find little less than unmixed, unmitigated evil. Cruel, sensual, tyrannical, and profligate towards the members of every other state, they were pride and haughtiness personified; whilst at the same time they were accustomed to worship, in abject and slavish submission, monsters beneath humanity, which is no more than may be justly said of too many of their emperors.

Such was the degenerate character of Rome and her children. It is a disgusting picture, but not without instruction: for it may tend to render us grateful for the blessings we ourselves enjoy in a religion which has not only established private and social morality upon a firmer and more consistent basis, but has even purified to some considerable degree the international affairs of modern policy. This still, it is to be regretted, admits of many arts and artifices, which are not permitted to disgrace with impunity the walks of common life. There are still unblushing persons who distinguish between a public and a private conscience: but it is nevertheless certain, in these more enlightened times, that, in the end, it will destroy their influence and degrade their memory.

To sum up the whole, we must confess that, in the earlier ages of Rome, her sons had many virtues: that these were of a character rather stern than amiable is equally certain: but it cannot be denied that many distinguished qualities cast a glory on the Roman name, which in spite of many blemishes will endure for ever. Cruelty, nevertheless, mingled with almost every transaction. How few are their examples of clemency! how many and dreadful their acts of pitiless, cold-blooded, calculating barbarity!

Jugurtha, for example, was undoubtedly a monster of iniquity: but he was punished by the Romans, not for his crimes—for at these they had long connived—but merely for having resisted their authority. Perseus was at once wicked and contemptible. Was it, however, necessary, after plundering him of his wealth, and triumphing over his misfortunes by making him a part of the spectacle of their consul's triumphant entry, to starve the unhappy wretch to death in his prison? The fate of Tigranes, the once proud king of Armenia, was even more pitiable still. Defeated in several battles and sensible of the impossibility of offering any effectual resistance to the Roman arms, he repaired to the camp of Pompey, and in the most submissive manner laid his crown at the feet of his haughty invader, surrendering up himself and his people to the pleasure of the Romans. Pompey, it is true, received the king with an outward appearance of favour: but after walking in the triumph of that fortunate warrior, amidst a crowd of other captives of the highest rank, he was cast likewise into a dungeon, where we are told he perished by famine. There is something so utterly disgraceful in this latter treatment of their captives; for, after all, it was probably parsimony which prompted it, if we knew the truth.

There are two circumstances which are particularly to be considered in the customs of the Roman nation, which cover them with eternal disgrace. *First,* that which has just been mentioned, of exhibiting the noblest of their prisoners in their triumphal spectacles, than which nothing can possibly be more cowardly and tyrannical. The *second,* is their compelling those of ordinary rank to butcher each other in the sanguinary sports of the amphitheatre. Let us imagine the brave, the noble, nay, even the members of an unhappy royal family, whose fate would have drawn tears from any noble enemy, exposed to that unnecessary degradation; let us imagine the young, the beautiful, the tender even of the softer sex exposed to the same indignity. We may, indeed, admit the valour of the Romans, but we must deny them every claim to the dignity of heroism.

On the other hand, what a people must it be whose national taste —unlike that of the Greeks who delighted in the drama or the athletic and at the same time bloodless games of the circus or the stadium; unlike the horse-races and other field sports of the English, and extending far beyond our most brutal amusements of bull-baiting, boxing, or cock-fighting; far exceeding in atrocity the bull-fights of the Spaniard—what a people, I repeat, must it be that could compel persons taken in open warfare to kill each other for public amusement! This, indeed, is horrible: but what a climax is it, as respects their national and social character, when we read that the young, the beautiful, and the most accomplished, even of the softer sex, hurried in crowds to these bloody scenes, and spoke of a skilful swordsman and his sanguinary feats as those of our day will of an opera dancer! Fancy this a national amusement, on which the spoils or tribute of a province were frequently expended, and which would at any moment win popularity to any wealthy personage in Rome: imagine all ages, all ranks, all sexes crowding the benches of an amphitheatre to the number of thirty thousand spectators, and all filled with the same enthusiasm! It is impossible to go beyond it: we must confess it is disgraceful to humanity. In fact, there is but one cheering ray in the remembrance of this strange and frightful custom: namely—that the first christian emperor of Rome put an end to it entirely.

In short, of the Romans, in every age, we are only able to say that, towards their enemies they were always cruel and vindictive: besides this, to their friends, when their own interest was concerned, too frequently faithless and ungrateful: that their private morality was dubious and questionable at the best, and their public policy treacherous and unscrupulous: that their religion was only a tissue of superstition: and all this dark picture of their vices only relieved by that stern and heroic fortitude which, in their perverted view of the matter, was entitled virtue. The picture drawn by the Lady of the Lake of her Highland admirer, Roderick Dhu, may serve for the "National Character of the Romans":—

"Wildly whilst their virtues gleam,
They make their passions darker seem
And flash across their spirit high,
Like lightnings o'er the midnight sky!"

A POPULAR SKETCH OF THE GEOLOGY OF DERBYSHIRE.

BY J. B. JUKES, B.A. F.G.S.

SHOULD a geological reader cast his eye upon this title, I entreat him to pause, while I tell him that he will meet in this sketch with nothing he does not already know, since I have only been able, during this wintery spring, to snatch occasionally a few days of geological weather, in which to acquire just so much knowledge of the country as should enable me to understand what others may have written or said upon the subject. As, however, my object in these papers is not the putting forth original observations, but solely the popular explanation of what is already known, this hasty examination of Derbyshire will be sufficient, I hope, for my purpose. I address myself, then, to the reader who has not made geology his particular study: and in order to make myself intelligible to him, I shall not scruple to put down what may be a thrice told tale to the experienced geologist.

The county of Derby, in its southern parts, is blended with that of Leicester, and the geology of the two is so intimately connected that an account of the one necessarily involves much of that of the other. If we draw a line from Ashbourn to Derby, and continue it thence to Nottingham, we shall have marked out a very important and striking natural division of the district. Any one who has passed through the county and crossed this line, even on the top of a stage coach, must have been struck with the difference that exists in the aspect and character of the country to the north of it and that to the south. South of that line, the country is a complete plain—fertile and beautiful indeed, and frequently varied with gentle undulations—but, upon the whole, a broad level space, stretching east and west between the hills of Leicestershire on the one hand, and those of the north of Derbyshire on the other. Through this plain runs the river Trent, to meet which the Derwent, the Dove, and the Erewash, with their numerous tributaries, come gliding in from every side. In a level and cultivated tract, like this, where every bank is clothed with grass, and nothing deeper than a gravel-pit is anywhere visible, a man may pass his life without a thought of what lies beneath the soil he tills. If, however, we cross the line before mentioned, towards the north, the scene is quickly changed: the country becomes gradually bolder in its features, till we find ourselves at length winding among the deep and lovely valleys of the Peak, environed on every side by lofty hills. Here every one becomes a practical geologist, so far as the composition of the different rocks and their range at the surface goes; and no one, however unacquainted with the science he may be, can traverse the country without having the subject forced upon his mind. He will sometimes cross the high bleak moors of gritstone, dark with the foliage of the fern and the heather, or covered with long plantations of fir trees, where dreariness itself has something of grandeur from its very extent. From these he will look, on the one hand, over the coal district, composed for the most part of longitudinal ridges, furrowed by transverse valleys, frequently well wooded and, where not actually deformed by smokey chimneys and heaps of cinders and rubbish, containing many lovely spots. Turning his back upon the coalfield, and proceeding towards the limestone district, he will generally find the gritstone terminate in an abrupt descent, with a line of rough beetling crags overlooking a narrow fertile valley. On the opposite side of this valley, the hills rise with a smooth but sometimes steep ascent, to a height equal or superior to that on which he stands. This valley is composed of shale, and has most commonly a brook winding among a strip of lovely meadows, and the hills opposite are limestone, and on them is no heather, no fern, and but few trees; but they are clothed with a short light-green turf, and their outlines, though not peaked, are yet lighter and more delicately traced than the heavy lumpish forms of the gritstone. But the chief beauties of the limestone district are its dales. The brooks and rivers run in narrow winding valleys, with precipitous walls of white limestone hung with the richest festoons of creepers, and from every ledge juts a dark yew or a bending ash, with thick woods of other trees on the green slope at the foot of the cliffs. The flashing waters of the brook as it foams over the ledges of rock that cross its path below, and the hoar cliffs that rear their heads into the sky above, form scenes to enchant the eye of the painter or the poet as well as to delight and instruct the mind of the geologist.*

Who, that thinks at all, can forbear inquiring into the reasons of the differences here pointed out? Why is it that, on one side of an almost straight and certainly a well-defined line, the country should be a perfect plane, and on the other a mass of hills? And what are the causes which have given to particular portions of this hilly tract, such definite and well-marked varieties of character? He who asks himself these questions has commenced the study of Geology; to answer them will be part of the business of this paper.

I shall begin them by briefly describing each of the different rocks or masses of materials of which the country is composed, their most remarkable characteristics, and the kind of organic remains they contain; and then consider the different positions they now occupy, and the effects of the moving forces that have placed them in those positions. The following are the different rocks or formations composing the district of Derbyshire, placed in the order in which they occur:—

AQUEOUS ROCKS.

1. Superficial accumulations, or diluvium
New red sandstone system—2. Red marls and gypsum
3. Red and white sandstone

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* It has been said, indeed, that the study of Geology tends to blunt a man's mind as to his perception and appreciation of the beauties of Nature; that in studying the nature and origin of the rocks, the geologist is apt to lose sight of the picturesque beauty of the country they compose. This, however, appears as reasonable as to assert that we no longer feel the melody or harmony of a poem or a song when we understand the language in which it is composed. To the geologist, a beautiful country is not an unmeaning pageant, the recollection of which is but a fleeting dream; but a well defined and individual object which speaks to his intellect as well as to his eye. Like an artist before a masterly picture, he observes harmonies and beauties unseen by others, and to him every minute variation of outline or shade of colour has its definite meaning and appropriate place, all the parts combining to form a perfect whole that has a permanent station in his memory.

4. Magnesian limestone
5. Lower red sandstone.

Carboniferous system—6. Coal measures
7. Millstone grit
8. Limestone shale
9. Mountain limestone.

IGNEOUS ROCKS.

A basaltic rock, commonly called toadstone, is found associated with the mountain limestone.

SUPERFICIAL ACCUMULATIONS OR DILUVIUM.

In the northern part of the district, there is little that would come strictly under the term diluvium. There are proofs of great denudations having taken place, not only in the valleys which have been worn, as it were, in the solid rocks, but more extensively over large tracts of the more elevated surface. We know not, indeed, how we can avoid supposing the shale and gritstone, and possibly the coal measures, to have been once continuous over the district where now the limestone is at the surface: but the stripping off of these, and probably the denudation of parts of the limestone itself, belonged to periods far anterior to that in which was formed what we now term diluvium. Boulders of gritstone may occasionally be met with within the limestone district; but almost always in the valleys, where existing causes may possibly have carried them. The flanks of the hills, too, are sometimes covered with what the miners call clay and boulders; but this is generally the debris of the neighbouring hills, or the result of the decomposition of the rocks on which it rests. No pebbles that have travelled from a distance are ever found, so far as I am aware, on the hills of limestone or gritstone, or in the valleys among them. Boulders* of basalt or greenstone, however, may sometimes be seen in the coal district, which appear to have come from the north, as they differ in their mineral character from any of the rocks in the neighbourhood or to the south of it. On going south, however, towards the line of division before mentioned, we find an immense accumulation of diluvium piled over the comparatively low hills and covering the plain beyond. This diluvium is of several kinds. The hill at the back of Ashbourn church is composed, to a considerable depth, of red clay, stuck full of pebbles of all shapes and sizes, driven pell mell together, without the slightest order or arrangement. These pebbles are almost wholly gritstone and limestone; and in some of the masses the calcareous matter has diffused itself sufficiently to bind the whole into a compact conglomerate, like that so often seen in the lower part of the new red sandstone.[*] It is, however, certainly a mere superficial diluvium, in which we can trace the action of the denuding forces that have brought down these ruins from the hilly region to the north. Over all the undulating country between Ashbourn and Derby, the diluvium consists for the most part of a light yellow sand, sometimes forming a soft sandstone and containing beds of pebbles. These pebbles are small, much rounded, and almost wholly quartz, a piece even of mountain limestone being rare. I never, among this gravel, too, could find or hear of any one finding a chalk flint. This is the more remarkable, because chalk flints, sometimes of large size, are scattered over the surface in considerable abundance[†]; and boulders of mountain limestone may likewise be met with. These facts seem to point to two distinct periods of diluvial deposit, the quartzose gravel being the oldest. As we descend towards the valley of the Trent and the country becomes more level, this diluvium gets less and less sandy, till it is at last almost wholly a mass of quartz pebbles. These pebbles are firmly compacted together, seemingly by the pressure of the mass; a sharpish blow is required to detach one, when its shape is generally left in a thin matrix of fine sand, which fills up the interstices between the pebbles. An occasional bed of sandstone, some inches thick, also occurs, thinning out within a few yards, and the whole mass has a semi-stratified character, the pebbles lying horizontally in regular lines. This gravel may be seen at Morley Brook, three miles N. E. of Derby, whence it may be traced at some height on the flanks of the Derwent southwards to the Trent. In the Castlefields south of Derby, it contains more limestone pebbles than are seen in it elsewhere. On the right bank of the Trent it is very abundant, gravel-pits at Repton being thirty or forty feet deep in it with perpendicular walls like a stone quarry. Whence the immense number of quartz pebbles can be derived is really a puzzling question. The majority of them are in every respect identical with those which, in Warwickshire and the neighbourhood, have been traced to the Lickey hill, and the levels of the country, which they seem to a certain degree to respect, would favour their transportation from that quarter; but they are certainly too abundant to have come wholly from that spot. Hartshill, near Atherstone, and probably some of the harder gritstones of the coal measures and new red sandstone, may have contributed their quota. In the south east corner of Derbyshire, and very abundantly about Chellaston, there is a diluvium of a different character; and this is the same as that in Leicestershire. It consists for the most part of rounded pieces of chalk and chalk-flints, and contains pebbles and fossils from the oolites and the lias, as also pebbles of coal. Boulders of mountain limestone also occur, but these are found occasionally lying on the surface over all the southern parts of the county, as are also the chalk flints. Pebbles of chalk, oolite, and lias are found nowhere, I believe, north or west of Chellaston. The state of these different materials has the same relation to the distance they have travelled as they have in the gravel of Leicestershire; but the most remarkable circumstance respecting them at Chellaston, is, that patches of this gravel are found interstratified, as it were, with the red marls and gypsum. In the plaster-pits near that place, there is thirty or forty feet of red marl exposed, resting on a thick mass of gypsum. The red marl is regularly bedded, perfectly horizontal, and contains regular bands of fibrous gypsum and lines of lenticular shaped masses of it lying in the plane of the beds, quite conformable to the gypsum below, and the whole, to all appearance forming one connected mass which was deposited without any breach of continuity. At various parts of the red marls, however, and frequently below the whole, on the thick bed of gypsum, lie patches of this gravel, a foot or two in thickness, containing pebbles and fossils of the lias, the oolites, and the chalk formations, all of which are of later date than the red marl itself. Notwithstanding the regularity of their appearance, therefore, it would be necessary to suppose this particular mass of red marls to be a redintegrated portion formed of the broken materials of other beds, and deposited along with the diluvium. While examining the materials thus singularly associated, however, one of the workmen mentioned the term "pot holes;" and on my enquiring what he meant, I found that over or near to one of these patches of gravel, there was frequently a "pot hole;" that is, a soft place in the marl, through which the water came in from the surface, and in which, by "dabbling with a stick," the whole of the marl would tumble in, leaving a circular hole from two to eight feet in diameter, and extending from the gravel below either to the surface of the ground or to a mass of similar gravel above. It is evident, therefore, that it is to these "pot holes" that the presence of the gravel among the beds of marl is due, the holes either having a previous existence, or being themselves formed by the action of the waters* which brought the gravel into this part of the country.

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* Some of these were pointed out to me around Chesterfield, which were two or three feet in diameter, and differed decidedly from any basalt I ever saw in Derbyshire.

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[*] On my first visit to this place, I was completely deceived into the belief that this hill was a new red sandstone conglomerate; and it was only on a second visit and seeing a larger portion exposed, that I perceived its diluvial character.

[†] About four miles south of Ashbourn, I one day found a chalk flint, containing a large inoceramus, one of the most characteristic shells of the chalk formation.

The organic remains which may be considered proper to the diluvium, are those only of animals living during or just prior to the period when it was formed. Of these, I have not heard of any others but land animals. Remains of these were discovered in the Dream Cave, near Wirksworth, of which the reader will find a description in Dr. Buckland's *Reliquiæ Diluvianæ.* Some bones of the *Elephas primigenius,* or Mammoth, have likewise been discovered in the gravel near Derby, one of which is in the possession of Mr. Fearn of that place. A tusk, and a considerable number of the bones of the same animal were also found at a slight depth below the surface, in the cutting of the railway below Smithimore Bridge, in the valley of the Amber; but as they were in a very fragile state they were nearly all destroyed by the workmen, from whose sacrilegious hands the remainder were rescued by Mr. Milnes, of Stubbing Edge, near Ashover.

We will now consider all the superficial matters stripped off, and the regularly bedded rocks exposed to view, the uppermost of which are the rocks belonging to the

NEW RED SANDSTONE SYSTEM.

This system or group of rocks is a very remarkable one in the Geology of England. It preserves certain characters throughout its course, almost invariably forming a comparatively level tract of beautifully fertile and well wooded country, its beds being nearly always horizontal, and its colour generally red. The composition, however, and structure of its parts, as also their thickness and extent, vary greatly in different portions of its range. It admits, on the whole of the four-fold division given before, its highest or superior portion being

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* It is not uncommon in brooks with rocky bottoms, to find small basins containing one or more pebbles, to which a whirling motion is communicated by the action of the current, continually increasing the size and depth of the basin: a similar action may possibly have produced these "pot holes."

2.—*The Red Marls and Gypsum.*

These, where they occur in Derbyshire, differ in no respect from their character in Leicestershire, except in the presence of the gravel before mentioned. The section at Chellaston is

	FEET.
Dark-brown marl with green stains and streaks, having many thin bands of fibrous gypsum and lenticular masses of it; thickness varying according to the surface of the ground, but generally	40
Marl, full of gypsum in intertangled veins	6
Hard gypsum without marl	14

The marl is indurated, and splits into small cubical lumps, as is often the case with the marls of this portion of the new red sandstone. It contains no fossils, so far as I am aware, except those belonging to the gravel before mentioned. The thickness of this formation in Derbyshire is probably not greater than 150 feet. Below it we find

3.—*The Red and White Sandstone.*

These likewise contain beds of marl in their upper portion, but of comparatively insignificant thickness, and having little or no gypsum. The sandstones vary in colour from a dark reddish-brown to a clear white, and in hardness from a good compact building stone to a friable sand. It has the same characters which distinguish this part of the formation in Leicestershire, Warwickshire, and Worcestershire. The beds of white sandstone form a considerable portion of the whole, but are variable in their thickness and extent, thinning out and then setting in again. In Derbyshire, however, there are nowhere any good sections exposed in this formation, owing to the levelness of the country it composes. The same cause prevents us giving even a guess as to the amount of its thickness in this county. I was not lucky enough to discover any fossils in this formation myself, but Mr. Meynell, of Tapton Grove, near Chesterfield, shewed me a portion of a calamite and fragments of other vegetable remains from a quarry near Langley, which agreed exactly with those found in this sandstone in Worcestershire. The appearance of the sandstone itself was also precisely the same. Although, then, I have not seen the place myself, I have little doubt of its being in the upper part of this formation.

Near the borders of Nottinghamshire, at Sandiaere and Stapleford, there are some very thick beds of a dark red sandstone, containing lines of pebbles, which I believe to belong to the lower part of the red and white sandstones, but of which I am not yet certain. There are one or two hundred feet of them exposed, forming some rather bold hills. The stone is hard and coarse grained; but the pebbles are hardly in sufficient number to give the rock the name of a conglomerate.

The next rock in order below the red and white sandstones, is

4.—*The Magnesian Limestone.*

Like all the other portions of the new red sandstone, this rock, while it preserves some characters, varies greatly in others in different parts of its range. When it occurs in Derbyshire, it is in its upper parts a beautiful white freestone, sufficiently soft to be cut with a knife, with a sparkling crystalline texture like coarse-grained loaf sugar. This is its character at Streetly wood, where it is thick bedded and quarried to a considerable extent. In other places it is thick bedded, harder, and more compact, and of a light yellow or straw colour. Some portions, while preserving this light colour and compactness, are thin bedded and flaggy, and much jointed; others again are in coarse-grained rough flags of a brick-red colour. Its lower portions are generally yellowish-brown, sometimes flaggy, and sometimes occurring in very smooth regular beds about a foot in thickness, when it is quarried for building stone. Its lower parts likewise contain sometimes beds of carbonate of lime, of a dull blue colour. Few or no fossils are anywhere found in this formation in Derbyshire: when they do occur they consist of marine shells. The thickness of this rock probably exceeds 300 feet. Below it, is sometimes, but not always, seen

5.—*The Lower Red Sandstone.*

This lowest portion of the new red sandstone system is still more variable in its characters than any other part. Its general character is that of a hard compact stone of a light red colour. It is, however, sometimes a soft micaceous sandstone, sometimes contains beds of red marl, and sometimes is indistinguishable in appearance from a coal-measure gritstone. Its thickness likewise varies from a few feet to two or three hundred, but in Derbyshire and Nottinghamshire it can never amount to so much. Its fossils are few, and when they do occur consist of coal plants.

The rocks which lie immediately* below those of the new red sandstone system, are a complicated and important mass of materials, which from one of their most useful products are termed the carboniferous group or system of rocks.

THE CARBONIFEROUS GROUP

consists of limestone, shale, sandstone, coal, and ironstone, the disposition of which materials, when the group is examined generally, is very variable. In Derbyshire, however, and over the southern part of England, the order in which they occur is found sufficiently constant to admit of the subdivision of the group into distinct parts. This subdivision is, perhaps, most complete in Derbyshire itself, where we find that the coal is confined to the upper portion of the group, and the limestone to the lower, its middle parts being almost entirely shale and sandstone, or gritstone. In determining these divisions, however, we must always remember that there are no hard and well defined lines between them existing in nature, but that each portion passes into the other by almost insensible gradations. The positive places, then, of each of our division lines must be in a great measure arbitrary and determined by our convenience, following as near as possible those marked out by Nature.

Beginning with the highest portion of the group in Derbyshire, we should find a series which may be represented by the following list, in which the different sizes of the type represent the differences in the relative importance of the beds:

Shale
Coal
Shale, with ironstone
Coal

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[*] The reader will always bear in mind that one rock may be below another in the geological series, but that the country formed of the lower rock will frequently be much higher above the level of the sea than the country formed of the upper rock. This is owing to the dip, or inclined position of the rocks, in consequence of which the same beds, which in one place form lofty hills, gradually sink, till in a few miles, perhaps, they plunge *under* others which form a low and level country.

Gritstone
Shale, with ironstone
Coal
Shale, with coal
Gritstone
Shale
Coal
Gritstone
Shale, with coal
Gritstone
Shale, with coal
Gritstone
Shale
Gritstone
Shale
Shale with limestone,
Limestone, with shale
Limestone.

The alternations, more especially of the upper part, are of course much more numerous than are marked here; but this will serve just to give a rough notion of the relative proportions of the different materials in the different parts of the series.

Upon examining the rocks composing this series over the whole district, and by attending, not only to the differences in the size of their masses, but to their other characters, we are enabled to institute four divisions in this complex group, which are those given before, (*p.* 223), and which will now be briefly described.

6.—*The Coal Measures,*

are the upper portion of the carboniferous group, and consist of very numerous alternations of thick beds of shale (called, also, bind and clunch), sandstone or gritstone, coal, and ironstone. The shale is a slaty indurated argillaceous earth, varying in colour from light grey to black, and treads down when exposed to the weather into a soft unctuous clay. It lies in very thick beds, (each mass being generally but one bed, which is sometimes sixty feet thick), composed of very regular and almost innumerable laminæ, marking the gradual nature of its deposition. It is generally jointed, or divided by vertical planes, very regularly, the joints being some yards apart, frequently parallel to each other, and crossed by other similar ones in certain directions. The shale commonly contains more or less ironstone, which either lies in it in regular beds, a few inches or a foot in thickness, or occurs in layers of balls or nodules, formed by the aggregation of the mineral particles, not unfrequently round a leaf or other organic body. These balls are frequently septarian, or traversed by cracks which have been filled up by spar, generally of carbonate of lime. The gritstones of the coal measures are generally a fine-grained sandstone, sometimes thick bedded, sometimes splitting into large flags with beautifully smooth surfaces. These gritstones vary much in hardness and quality, being sometimes a good freestone, sometimes a hard stone with a ragged fracture, (called cank), only fit for mending roads, and sometimes they pass insensibly into shale and decompose rapidly by the action of the atmosphere. The gritstones frequently form continuous masses 60 or 80 feet in thickness. The joints of the gritstone vary with the character of the stone, being most regular in that which is thin bedded and fine grained. The different coal seams of Derbyshire, not only vary greatly in quality, but the same bed is frequently very different in different parts of the country. They are sometimes hard bright coals, being got in large blocks with smooth shining surfaces, sometimes soft and crumbly, forming what are called caking coals. From this great variety in the quality results the great advantage of having coals in the district suited to all uses, from those calculated for use in the drawing-room to others which are only fitted and are best adapted for the furnace or the forge. The vertical divisional planes of the coal beds in Derbyshire, which are there called slines, and which nearly answer to the joints of other rocks, follow the same remarkable law which they are found to do in other places, and run about magnetic N. and S.* The number of workable coals in Derbyshire is considerable, amounting to at least fifteen or sixteen beds; but for want of a general system of nomenclature, it is very difficult to trace these across the country, or to identify them in different localities, since the names given to the beds in one place are unknown in another only a few miles distant. There are five or six beds which are from four to six feet in thickness; one seam over the south part of the district is nine feet thick, but it is probably there composed of two beds; and there are many others which vary in thickness from three or four feet to as many inches. Each bed commonly preserves its thickness over a very wide area, and the distance between each bed of coal is pretty much the same in one part as in another. The beds, however, of shale and grit which lie between the coal seams are very irregular in their extent: a bed of gritstone, perhaps, which in one place is of great thickness and occupies almost the whole space detween two particular beds of coal, shall in another a few miles distant be found to have thinned out to a few feet and its place to be almost entirely occupied by shale. This regularity and constancy over a wide area in a thin bed of coal, and the irregular thickening and thinning out of the shale and grits, evidently points to a difference in the conditions of their deposition. The coals seem to have been deposited during a period of tranquillity, in which the vegetable matter had time to diffuse itself equally over the whole space occupied by the water which contained it, while the shale and grits were swept in by currents which piled one material in one place and left another bare to be occupied by another material brought in perhaps by a different current.

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* The miners are often fully aware of this universality in the direction of what is called, in different places, the sline; for, in answer to my question, one of the workmen told me that the cleet or the face of the coal "faced two o'clock sun, like as it does all over the world as I ever heard on."

This irregularity in the different beds is only apparent when they are traced over a great extent of country: locally they are regular enough; and we find the gritstones forming at the surface longitudinal ridges (running about north and south) on which the soil is light and fertile, with valleys or flat lands of shale, where it is frequently cold and barren.* These cold and barren spots can often be improved only by thorough draining, and this the miner most effectually performs; and by carefully preserving the vegetable soil and respreading it when he has passed through the ground, tracts of land are often rendered fertile which by any less efficient process would always have been unproductive. This necessary precaution is in other places too often neglected.

The total thickness of the coal measures in Derbyshire is very great, certainly not less than 2,000 feet, of which about sixty-five feet consist of coal disposed in many beds. So that if we could see the whole exposed in one great cliff, we should see a huge mass of shales and sandstones, in which the coals would shew like thin black seams or streaks, or as dark partings between the thickened beds of the other materials.

As we descend† towards the lower part of the coal measures, we find the gritstones become more numerous and thicker, until they assume the appearance of a mass of gritstones, between certain beds of which occurs sometimes a bed of shale containing a thin bed of coal. To this mass of gritstones is applied the term of

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* No coal field with which I am acquainted can compare with that of Derbyshire, for the pleasantness of its aspect, owing to the many ridges of gritstone.

† As far as regards the level of the country, this would be ascending; as where the lower portions of the coal measures come out to the surface, they form much higher ground generally than the upper portion.

7.—*The Millstone Grit.*

This name of the millstone grit, (the derivation of which is sufficiently obvious), is applied by the Derbyshire coal and iron owners solely to the lowest bed of grit in the district, which is certainly the thickest and most important; and this is the sense in which the word is used by Farey, and in which it must continue locally to be received. There are, however, several beds of grit above this, which cannot be distinguished from it by any character except that of position, and which unite with it to form the remarkable and decided country of the Moorlands. These beds taken together constitute a well-marked division of the series, having peculiar features both as to the kind of country it composes and its other characters, which would be left without any common designation unless that of the millstone grit be extended to it. This extension accords both with the system of nomenclature adopted by geologists and with actual fact, since millstones are got from all these beds of gritstone indiscriminately. As far as I have seen of the country, I should think that the four first gritstones of Farey (he reckons from the bottom) would enter into this group; and the millstone grit would then consist of

1. Gritstone
2. Shale with a bed of coal
3. Gritstone
4. Shale with a poor band of coal
5. Gritstone
6. Shale with a coal smut
7. Gritstone, called by Farey first or millstone grit.*

We thus get a peculiar and important group clearly marked out, and give to this division of the series a greater equality with the others; and we render more intelligible the occurrence of several detached portions of coal which are found separated from the regular coal district, more especially the coal which is worked at Alderwasley, which lies, I believe, between the third and fourth gritstones of Farey, and is, I am informed, the same as the Alton coal, which certainly occupies that position near Ashover. The gritstones of this group vary, in different portions of the same bed, from a coarse conglomerate of small clear quartz pebbles, to an almost fine grained sandstone. Many portions are hard enough for millstones, and almost all of them make an excellent material for railway blocks and similar purposes. They are thick bedded universally; and sometimes so much so that, for this reason and on account of the oblique lamination so prevalent in all sandstones, it is very difficult even in large quarries to discover the real bedding and dip of the rock. The oblique lamination shows, probably, the action of strong currents, which depositing successive layers of sand on the side of a slope, have caused the lamina of a bed to incline at a considerable angle in one or more directions, while the bed itself, which is made up of these lamina, may be horizontal or dip in another direction. The thickness of the lowest grit, or that which is known in the country as the millstone grit, being upwards of two hundred feet, it is probable that the thickness of the rocks which are here classed as the millstone grit group would be between four and five hundred feet.

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* Coal and shale occur both in the millstone grit of Yorkshire and below it: we shall then by this plan have the group consistent throughout, and it is the nomenclature always adopted by geologists.—See Phillip's Geology, in Lardner's *Cabinet Cyclopædia*, Vol. I, p. 155.

ORGANIC REMAINS OF THE COAL MEASURES AND MILLSTONE GRIT.

These are both animal and vegetable, by far the greater portion belonging to the latter class. The animal remains consist of shells and fish. In some of the bands of ironstone, and occasionally in the shales, there are found a great number of bivalve shells, which, as they belong to the genus Unio, must have lived in freshwater. There are several species, of some of which the individuals occur in the greatest abundance, and are sometimes beautifully perfect and well-preserved. On splitting open the masses of black shale which lie upon the coal, and which may be found around a newly-sunk shaft, teeth and scales of fish, as well as fragments of their bones, may be found*, similar to those which are contained in other coal-fields. The fish of the carboniferous system have been shown by

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* Mr. Atkinson, of Chesterfield pointed out the occurrence of these fossils to me in the neighbourhood of that town.

M. Agassiz to have been of a very remarkable kind, having many of the characters of a saurian reptile, whence they have been called Sauroid fishes. Some of the teeth found near Chesterfield are conical and striated, more like those of an Ichthyosaurus than the flat teeth common to fish: others, however, are palatal teeth, similar to those found in the chalk, but differing from them in form and markings.

The vegetable remains of the coal measures are far too numerous and form too complicated a subject to enter upon in this sketch. I must, therefore, refer my readers to Lindley and Hutton's *Fossil Flora* for a general description and figures of coal plants, and content myself with saying that the vegetable remains of the Derbyshire coal measures do not differ from those of other coal fields. Many parts of the district seem very barren in fossils; in others these are abundant. The genus *Calamites* is common, *Lepidodendron* not unfrequent, but *Stigmaria* and *Sigillaria* seem more rare than usual, neither is there that abundance of beautiful fern leaves which may be seen in some places, especially in the Ashby coal field, as described in Mammatt's *Geological Facts*. The truth is, however, that sufficient attention has not yet been bestowed upon the district; and there is no doubt it would amply reward the perseverance of local collectors, whose labours we hope will ere long be devoted to it.

8.—*The Limestone Shale*

Is the next group in order below the millstone grit. This is for the most part an immense mass of shale: in its upper portions, however, it frequently contains beds of gritstone, and in its lower, beds of limestone, showing a passage by insensible gradations into the rocks above and below it. This shale does not differ in character or appearance from many of the shales of the coal measures; it is, however, more universally black, and it stands exposure to the weather for a much longer time than the generality of the coal shales. It splits commonly into remarkably thin laminæ, contains many ironstone balls, and sulphur may frequently be seen in its crevices or lying in it in streaks and patches. The water which runs through it is generally ferruginous. Its thickness appears to be variable, the average being probably five or six hundred feet. In the southern part of its range, however, it occupies a wide surface, and here it probably becomes thicker. It contains here, in its lower portions, many beds of limestone, which may be seen to advantage at Turnditch, and at Agnis Meadow, near Kniveton. At Turnditch lime quarries, there are forty feet exposed, consisting of alternations of shale and limestone in beds varying from three inches to three feet in thickness. The limestone is very hard, rather crystalline, dark coloured internally, but light brown outside. Its external appearance, when exposed to the weather, is at a little distance more like gritstone, and the weathered blocks are marked by horizontal lines, showing an original lamination. Sometimes this lamination is apparent, and the block will split into flags. Beds of this kind, I believe, exist at Ashford, near Bakewell; and I observed a bed of dark limestone, one foot thick, in the limestone shale which forms the bed of the brook just above Breadsall, two miles north east of Derby.

The beds of limestone in the shale increase in number and importance, I believe, as the formation passes westward into Staffordshire: but I shall leave the further discussion of this point till I come to speak of the positions and dislocations of the rocks, which in this formation are very interesting.

9.—*The Mountain Limestone.*

This, the most interesting and, next to the coal measures, the most important formation in the district, is so named from its frequently forming a hilly and mountainous country. The name is not a good one, as other limestones may equally form mountainous countries: but as the whole nomenclature of Geology is at present provisional, it is better to retain the old and generally understood names, as far as possible, till a regular system of classification and nomenclature can be constructed. By far the principal mass of the mountain limestone is composed of carbonate of lime, sometimes in rather thin and regular beds, sometimes in beds so thick and irregular as almost to defy the detection of the dip (or inclination) of the rock, unless a very large section be exposed. Among the beds of carbonate of lime, are sometimes found portions which contain magnesia in considerable abundance; and in some parts of the limestone district there is a thick and important formation, called "dunstone," which I believe to be magnesian limestone. The bedding of this is often obscure; but in some places, as on Middleton Moor, near Wirksworth, the lines of stratification are very apparent. In the upper beds of the mountain limestone, there is frequently a considerable quantity of silex, in the form of chert. This occurs sometimes in beds, as in the quarries near Bakewell, where a bed of chert, six or seven feet thick, is quarried to be sent to the china manufactories in Staffordshire. Chert, however, most usually occurs in nodules and irregular masses distributed in the beds of limestones or in thin plates in the interstices between them, and in these conditions precisely resembles the flints in the chalk formation, of which the geologist is instantly and most strikingly reminded by many small cliffs in the upper part of the mountain limestone. If the chalk were indurated to the texture of the mountain limestone, no one could perceive the difference, except from the organic remains.* The thickness of the mountain limestone is certainly very great, but as the base of the formation is nowhere exposed in Derbyshire, notwithstanding the deep valleys and dales which have been scooped out of it, its entire thickness is unknown. Neither is it at present ascertained what is the thickness of those parts which are exposed; and this point is one beset with many difficulties. It is obvious that where we get a thick formation composed of many beds of the same material, and there is no section or pit deep enough to ascertain its thickness at any one point, but we are obliged to measure the different beds at many different places wherever we can find them exposed, the operation is one not only of great labour and difficulty, but liable to many errors. If all the beds were limestone, with no other material between them, it would be next to impossible to ascertain the whole thickness correctly. This, however, is luckily not the case, since thin partings of clay are sometimes found, seldom more than a few inches in thickness, and sometimes only half an inch; but occurring apparently between the same beds with considerable regularity over tolerably wide areas. These partings will probably be of great use eventually in working out the geology of the limestone. But the most important division of the mountain limestone is produced by the presence in it of a rock entirely different, not only from the limestone itself, but from all the others which we have hitherto met with. This is,

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* This fact, and that of a tertiary limestone in the south of France containing nodules of flint similar to the chalk, (as described by Mr. Lyell), are remarkable, as showing us how accurately the same effects have been produced by Nature, when working under similar conditions, in æras so remote from each other as those of the production of the mountain limestone, the chalk, and the tertiary strata. From the similarity of the effects we may argue directly to the identity of the cause.

THE TOADSTONE.

The toadstone is a basaltic[*] rock which in its dark colour and its sometimes spotted appearance is supposed to resemble the back of a toad; whence its name. It varies greatly in character and appearance, being sometimes a hard compact basalt, perfectly black, and homogeneous in its structure; sometimes a light cellular stone of a brown colour, the cells being filled with crystals of zeolite, mesotype, agates, or other minerals. Upon exposure to the weather these substances sometimes decompose and fall out, when the toadstone assumes exactly the appearance of a scoriaceous lava. It is never stratified, but is often jointed in all directions, and is sometimes laminated. It frequently has a tendency to decompose into balls, but never assumes anything like a decided columnar structure. The thickness of the toadstone varies from eighty to upwards of three hundred feet.[†] Its upper and *lower* surface is almost invariably covered by, or *rests upon*, several feet of a greenish yellow clay, which frequently contains balls and lumps of toadstone, and which is apparently the result of the decomposition of the bed. That this is the case seems to be proved by the condition of the limestone that rests upon it, which is frequently conformable to the uneven surface of the toadstone clay. In the Wheal's Rake mine[‡] in Lathkill Dale, the lower bed of a mass of Limestone is seen resting on a thick mass of toadstone clay, which passes downwards into toadstone. The upper surface of this clay is very uneven, being all knolls and hollows; and from its soft nature it falls down in places into the workings, and leaves exposed the under surface of the limestone. This under surface is just as uneven as that of the clay, and indeed exactly fitted on to it, containing hollows two or three feet deep and the same distance across, out of which a mass of clay has fallen, or protuberances fitting into hollows of the clay, and completely conveying the idea of the limestone having been deposited on the rough uneven surface of what must have been at that time solid toadstone, and which has since decomposed into clay. The toadstone has undoubtedly not been injected into the limestone, but poured out as a lava current on the bed of the ocean in which the mountain limestone was deposited.

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[*] Basalt or trap is one of that numerous class of rocks which are known to be the product of heat, or to have cooled down to their present condition from a state of fusion.

[†] In the valley of Ashover, I was informed by Mr. Milnes, of Stubbing Edge, that they had sunk in 1788, at the Townstead shaft, 375 feet in the toadstone, and then bored thirty or forty feet without getting through it. In other parts of the same valley, however, it is much thinner, being only two hundred feet thick at a shaft about three hundred yards distant from the former.

[‡] I am indebted to Mr. J. Barker, of Bakewell, for a sight of these mines, and for much valuable information respecting them and the district in general.

We now come to the important question of the number of parts into which the mountain limestone is divided by the toadstone, or, in other words, the number of the beds of toadstone existing in this formation. Farey and the old geologists, in examining the country, found the toadstone bassetting or coming out to the surface in many places, in the sides of valleys or at the tops of hills, and finally agreed that there were three distinct beds, separated from each other by two beds of limestone, and having limestone above and below them; thus making four limestone and three toadstone beds. Mr. Hopkins, however, of St. Peter's College, Cambridge, after a very laborious examination of the district, has shewn (in a pamphlet to which, I am sorry to say, I cannot refer my readers, as it was only printed for private circulation) that this conclusion is by no means warranted by the facts of the case; but that these, when thoroughly investigated and followed out into all their consequences, prove the existence of only one *known* toadstone bed over by far the greater portion of the district. This one bed, together with the limestone above and below it, is so fractured by faults in different directions, as to have different portions of it brought up in various places, thus producing the deceptive appearance of several beds. Since Mr. Hopkins's examination of the country, however, it has been proved, by sinkings in one perpendicular shaft, that over a part of the district there are two beds of toadstone, as the following sections show:—

Wheals Rake Mine.

1st Limestone	57 feet
1st Toadstone	84
2nd Limestone	48
2nd Toadstone	9 and more.

The thickness of the second toadstone here is unknown, as the workings have not been continued to a greater depth.

Hungher Hill Mines, near Snitterton.

1st Limestone				21 feet.
1st Toadstone				84
2nd Limestone	Limestone	72ft.	0in.	
	Three clays	0	6	
	Limestone	36	0	
	Clay	0	2	
	Limestone	12	3	120
2nd Toadstone	reached, but not pierced through.[*]			

To these proofs may be added, the toadstone beds seen in Lathkill Dale and at Fin Copt Hill, and left uncertain by Mr. Hopkins, and probably, also, the beds seen in the High Tor and at Masson Lowe, near Matlock. When, however, we come to the question of the thickness of these different portions of the limestone, we again seem environed by difficulties. At Ashover, the whole distance between the bottom of the shale and the top of the toadstone, as seen in the shafts of the Gregory mine, is not more than 180 feet; and in Matlock High Tor and other points of the eastern boundary of the limestone district, where the whole thickness of the first limestone must be visible, it does not seem to be much more. At Tideswell Moor, however, Mr. Hopkins mentions a sinking in the first limestone of 600 feet without reaching the toadstone, and estimates the depth of the toadstone at a similar rate in the district around Monyash and north of Middleton Moor, by Wirksworth, and other places. Even, therefore, if we suppose with him, (and which probably is the case) that the first toadstone of the east part of the district thins out towards the west, and its place is occupied by limestone, there still seems a great irregularity in the thickness of the upper part of the limestone formation, in different parts of the district. Of the thickness[†] of the lower part of the mountain lime-

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[*] My friend, Mr. Alsop, of Darley Dale, informs me that, a few yards further on, this second bed has been sunk through, and its thickness ascertained to be 108 feet.

[†] If, in the south east part of the district, we estimate the beds as follows:

1st Limestone	200 feet
1st Toadstone	90
2nd Limestone	120
	410

we shall get 410 feet as the extreme thickness which the first limestone ought to have over that part of the district where there is only one toadstone, in Derbyshire, nothing, as I said before, can be known, as but little of it is anywhere visible. Professor Phillips, however, does not assign a greater general thickness than from 500 to 1500 feet for this formation: it is probable, therefore, that more than half the whole thickness of the mass may be seen in one part or other of the Derbyshire district.

The most valuable product of the mountain limestone is lead ore. This is found in veins, which are of two kinds, technically called "rake veins" and "pipe veins." Rake veins may be best understood by conceiving a vertical, or nearly vertical, fissure in the limestone, varying in width from a few inches to three or four yards, and running in a directly straight line across the country, sometimes for several miles. This fissure is filled with spar of various minerals, and contains galena, or sulphuret of lead, either in detached cubical crystals, or more commonly in great "ribs" in the spar. Pipe veins are similar masses of spar and lead lying between the beds of limestone, but they are generally connected more or less directly with rake veins, or with great hollows and caverns in the solid limestone. The rake veins run in certain directions, and have others crossing them more or less nearly at right angles, and are ultimately connected, as we shall see hereafter, with the dislocations of the rocks. Where two rake veins cross, or where a rake vein meets a pipe, the ore is generally very abundant. It is a remarkable fact, that, on tracing a rake vein down to the toadstone, that rock is found to interrupt it, and it was for a long time supposed that the toadstone entirely "cut off the vein." It is now known, however, that on piercing the toadstone the same vein may be regained, and that it is frequently richer* than it was above. Veins of spar, called "leaders" may be traced through the toadstone; and in some instances a lead vein has been worked for as much as ten yards into the toadstone itself. This, however, is very rare.

ORGANIC REMAINS OF THE MOUNTAIN LIMESTONE.

These are, in some parts, very abundant, but belong almost wholly to marine animals. Some plants and leaves may occasion-

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stone. It is possible that the difference may be caused by the inclination of the beds, which would, in a perpendicular shaft, increase their apparent thickness.

[*] A notion prevails (whether well or ill founded I cannot say) in Derbyshire, that no vein is *very* rich till it gets covered either by shale, clay, or toadstone.

ally be found in the limestone shale, similar to those of the coal measures. I have seen a few from the limestone beds in the lower part of the shale at Turnditch and Ashford. The marine remains consist of Corals, Crinoidea, Crustacea, shells, and fishes' teeth. The Corals are very abundant in particular places, and are frequently preserved with the utmost beauty, looking as perfect as if fresh from our own seas. *Tubipora, Syringopora, Turbinolia, Cyathophyllum* are among the most common genera. There are many, however, which have not yet been accurately figured or described, and with whose names and affinities I am unacquainted. The Crinoidea occur in particular beds in the most enormous abundance, and are well known from the sections of their stems producing the remarkable figures in the encrinal or Derbyshire marble. Rocks, many yards in thickness, are in some places literally composed of the fragments of the stems of these animals; and what is remarkable is, that while millions of stems may be seen, it is rare to find even a fragment of a head. In the neighbourhood of Ashford, however, the heads seem more abundant. Many genera of these animals are found; but for figures and descriptions of those peculiar to the mountain limestone, as well as of the fossils of that formation generally, the reader must consult Professor Phillips's *Illustrations of the Geology of Yorkshire,* Vol. II. The Crustacea consist of Trilobites, (of a different species from those of Dudley), many of which are found in the black marble at Ashford* and its accompanying rotten-stone. The shells of the mountain limestone are, I believe, wholly marine, and are of many genera and species. In the quarry at Turnditch may be found one or two species of a bivalve, which I believe to be a Posidonia, as also, both there and at Ashford, Orbicula, Lingula, and other remarkable shells. The most common and characteristic bivalves are the Producta, many species, varying in size from that of a nut to that of a man's head, lying in the rock, sometimes, like beds of oysters; the Spirifer, many species, never exceeding the size of a fist, and remarkable for two internal spiral appendages, which are sometimes perfectly preserved; and the Terebratula, a smaller shell, some species of which assume the most singular shapes. Of univalves, there may be found the Melania, the Natira, the Pleurotomaria, and others. The Euomphalus is common, and may be known by its shape something resembling an Ammonite, except that the whorls are elevated towards one side. The Bellerophon is a wide round shell, whose inner whorls are almost wholly concealed by the external ones; it is supposed to be allied to our Argonauta. Of chambered shells, the mountain limestone contains one or two species of Nautilus; a kind of Ammonite, called the Goniatite, a small nearly spherical shell generally, with the septa of the chambers bent into acute angles; and the Orthocera, the best idea of which may be gained by imagining a Nautilus unrolled and made straight. Some fishes' teeth have been found in the limestone at Ashford.

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* For specimens of the very numerous and interesting fossils of the neighbourhood of Ashford, those desirous of them may apply to Benjamin Sellers of that place—a remarkably civil and intelligent man, who has the best collection of limestone fossils in the county, and (a virtue rare in fossil-dealers) is moderate in his charges.

It is worthy of notice, that when any fossils are found in the chert, the cast only of them is preserved, as is seen in the casts of the internal part of the Encrinite, so abundantly found in the chert and commonly called screw stones. The way in which the shells and other remains are found embedded in the solid rock is often remarkable, and when examined attentively will be found to afford many evidences of their having lived and died in the spots where they are now found, and of the slow and gradual process by which they have been entombed. Some species of Producta were provided with spines, and these may occasionally be found still perfect in all their delicate beauty adhering to the shell. Many, if not the majority, of the shells are filled only by crystals of carbonate of lime, and not by the compact matter of the rock, which shows that they were embedded whole and unfractured, that not even the ligature of the hinge had given way, and that the interior matter had only gained access to them by percolation through the substance of the shell.* Others, again, occur in single valves, and some have evidently been broken before they were embedded in the rock, as we might now find shells loose or broken on the floor of our seas. Occasionally, about the junction of the limestone and the shale, I have seen beds in which great quantity of fragments of shells and other things occurred, as if currents which had the power of drifting shells began then to prevail. Everything, the more we examine the rocks in their native home, instead of studying them by the help of cabinets of specimens, tends to fix in our minds the belief that we are looking on things which have been formed beneath the waters of ancient seas, where the same operations were in progress as must now be taking place in our own seas, where numerous creatures of many classes were continually running the round of existence, eating or being eaten, dying or coming into life, and where slow but constant precipitations of earthy matter must be taking place, silently entombing the relics which remain.

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* In a quarry near Hopton, where the shells are very perfect, I have frequently, on breaking one open, found a black shining substance, splitting into small cubes, apparently pure bitumen. Could it be derived from the animal matter of the creature which inhabited the shell? No black marks were visible externally, nor was any black stone in the neighbourhood.

[*To be continued.*]

[In the section across Leicestershire, in the April No., the lines representing the new red sandstone must not be taken as representing also the lines of its stratafication, which is everywhere horizontal instead of oblique.]

NOTES* ON THE NATURE OF INSANITY.

METAPHYSICAL contemplation exercised patiently in reflection on consciousness, and anatomical research conducted minutely on the brain and nervous system, have altogether revealed nothing whatever concerning the *nature of Mind,* and but little regarding the *material* ORGANS through which its affections and actions are manifested. Hence, on this momentous subject, have arisen so many and so contradictory opinions promulgated as maxims by Masters in Science enjoying the brightest reputation for intelligence and wisdom. Hereon also, have rested the sources of those obstacles which continue to impede the development of a methodical philosophy for investigating the essential Nature of Insanity.

What, then, is Insanity? Is it a mental, or is it a corporeal disease? Or, is it a state in which both the body and the mind are simultaneously affected?

Our total ignorance of the Mind's nature, as has been said, and our defective knowledge of the Brain and Nervous System through which the mind acts and is acted upon, will explain why so many solemn fancies have been entertained and fondly cherished, on the subject of Insanity. Superstition devised the romantic notion, that Insanity proceeded from the malignity of demonian influence; and, as a duty descending from necessity, the charge of disenchanting its victims was charitably undertaken by the priesthood, and the powers employed with this aim, were amulets, exorcisms, charms, and other mystical expedients. For more than two thousand years, the sagacity and experience of Hippocrates have preserved the profound reverence ever due to his authority; and, with this venerable Father of Physic, as well as his chief disciples in the Hellenic, Italian, Arabian and Arabistic schools, it was held for a fundamental doctrine—that *Insanity* exists as the *symptom* of a *corporeal* disease. This natural and self-evident conclusion was afterwards supplanted by the assumption wherewith inventive psychologists would represent Insanity as a *disease* of the *mind* itself, and thus endeavour vainly to metamorphose a *spiritual* system into a *material* machine with its elements susceptible of decay and dissolution. The "divine old man" attributed the disease to a mixture of bile with the blood; others held it for a result from an excessive determination of blood to the head. For a long while, among the moderns, it was generally considered purely as a *mental* affection requiring only moral remedies: more recently, however, and on substantial grounds, it has come to be regarded as a distinct bodily disease.

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* Founded chiefly on Chapter II of a *Treatise on the Nature, Symptoms, Causes, and Treatment of Insanity;* with practical observations on Lunatic Asylums, and a description of the Asylum at Hanwell, with a detailed account of its management; by Sir W. C. Ellis, M.D. Resident Medical Superintendent; 8vo, London, 1838; pp. 352.—For modesty and merit, this Treatise deserves the highest consideration: it discloses the practical views of a judicious and experienced physician: and these views exhibit good sense, unostentatious humanity and profound reflection, as their distinguishing characters.

There is every reason for believing that all animated beings possess such a portion of mind as is adapted to their several conditions. Some require no more than is sufficient to direct them in the choice of food, to warn them of danger, and to induce them to procreate an offspring. Their instincts operate through a corporeal machinery, which is exceedingly simple in such creatures: they have "ganglia and plexus of nerves," but are destitute of brain: in those where the energies of mind are more extended, there is a cerebral organization superadded to a more elaborate development of the nervous system. Man possesses a bodily structure and mental powers, in their nature similar to those enjoyed by the brutal tribes; but in addition to the animal endowments, he is gifted with far higher and nobler faculties. He has, and ever has had, the capability of knowing and worshipping and loving God, and of perceiving divine or supernatural impressions. Now, this distinction has place wherever man is found, at the equator and at the poles, in the white-skinned European and the sable African and the American savage: it is a distinction that can never be obliterated. Relying on the impregnability of this induction, we may inquire—What, then, do we observe, in the formation of man, uniformly distinct from that which exists in all other animals? His brain has a more exquisite organization, and a great multiplication of its parts, many of which are not found in any other animals, even the most perfect; although, with this exception, there is no other part of the human body which, in one or other of them, is not more or less developed. Now, since there appears to be a certain limit to the manifestations of mental power in each class of animals, so also it is exceedingly probable that there exists a great difference in the mental capabilities of the individuals whereof each class is composed. This much, however, is well known—that, in various quadrupeds and the higher class of animals, and in man more particularly even to a great degree, such a difference actually prevails and is readily distinguishable.

When we judge whether the functions are healthily performed in any species of animals, we naturally look at the habits and capabilities whereby, as a species, it is characterized. We do not then consider the absence of that which is not usually found in such a species, as an indication of disordered function: nor should we reckon the existence of a capability much superior to that which appears in other species, as being of itself an evidence of functional soundness, because of the difference of their natural instinctive powers and habits. Is not, then, the same rule applicable to different individuals of the same species, and particularly to man? From experience, we learn that an immense difference, both in physical and mental powers and habits, from whatever causes, exists among mankind. Now although it has been fancied that this might be obviated by previous education, yet undoubtedly there are many such differences which no external circumstances could remove. We should be unable to form an opinion of the soundness of a limb merely from knowing its absolute power: the arm of a strong man, though in a state of disease, may be able to lift a much greater weight than the perfectly healthy arm of a person who is weak and delicate: before the absolute power then can be tested, we must know the previous capabilities. Hence, obviously, it ought to be the first object of our inquiries, in estimating the sanity of an individual, carefully to ascertain what have been the former habits and powers of his mind; what the state of his feelings and sentiments; and what his general conduct. Would it not be irrational to conclude that a man, possessing great talents, is necessarily sane, because he is capable of performing certain mental operations with accuracy? Would it not be equally irrational to conclude that persons, having a weak mind, are not sane merely because they find themselves incapable of performing similar operations? In either case, should we not be justified in pronouncing the individual sane, when the manifestations of his affections, sentiments, intellect and general conduct continue in accordance with the previous exhibition of his mental powers and habits? These may have been such as to keep the individual incapable of performing the relative duties of life; and, for this reason, the imbecile or idiot is not held to be afflicted with insanity, which here expresses, by restriction, those cases exclusively wherein an originally sound mind has fallen into a state of unsoundness. We arrive, then, at the conclusion— that the man is "of sane mind" in whom the manifestations of feeling, sentiment, and intellect, in general conduct, continue either to improve or keep in harmony with the exhibitions of his previous powers and habits: and this constitutes the rule of distinction, whether his mental energies are great or small, whatever may have been the degree of their cultivation, and however remarkable the difference may be between him and other individuals.

Having noted these preliminary remarks, let us enter on the investigation as to the nature of Insanity; and, first of all, let us ask, What do we find as symptoms or appearances constantly attendant upon Insanity? This reply has been given:—"That which is first and invariably noticed, is some injurious alteration either in the intellectual manifestations, or in the conduct, or in both;" but this answer presents the appearance only of being precise: an attempt at definition might be preferable. Insanity means *unsoundness* merely as its primary signification; but it implies the unsoundness of what had originally been sound. By conventional usage however, the term has obtained a definite and comprehensive import; and, in general phraseology, it is now employed to express *mental* unsoundness under all its specific forms with their diversified characters. But here again, this unsoundness is conventional also; for the mind's nature remains altogether unknown, and its states are distinguished constructively by the co-existent states of those corporeal organs through whose instrumentality the operations or functions of mind are manifested. Insanity is always concomitant with disease in the brain: the chief indications of insanity should always be regarded as distinctive symptoms of a cerebral affection: new and perverse working of the Mind's animal propensities, moral sentiments or intellectual powers, constitutes the essential character of

Insanity. *Insanity then is that unusual state wherein an Individual persists in expressing unreasonable thoughts or attempting improper actions, having a tendency to injure himself or others,* with or without *discernible* disease of the cerebral structure.

Quite clear it is, moreover, that if we can show an intimate connexion between any part of the human body and the mental manifestations in human conduct which are the subjects of the alteration uniformly found in concomitance with insanity; and if we can also show that, where this injurious alteration prevails, there is at the same time diseased organization or diseased action in such part; we shall then have done much towards arriving at a right conclusion on the nature of insanity. Now, let us put the same question essentially altered—Can we trace such a connexion between our mental manifestations and the brain and nervous system? We have seen that, in animals where the mental powers are in low endowment, there is a proportionate absence of cerebral organization; and that, in man, where the mental powers have the highest development, the cerebral organization is the most elaborate.—When the whole human brain has been rendered torpid by chronic inflammation, by gradual pressure from the slow effusion of a fluid, or by any other cause, an alteration is effected and it reduces the cleverest man to the level of the lowest animal, in point of moral and intellectual capacity: his appetite remains and he takes aliment; but, as the cerebral pressure and disease advance, so he loses the ability to perform all other voluntary actions. When the brain is excited to an unusual degree of activity, this is always accompanied with a corresponding increase of activity in the mental manifestations. Thus, when fermented liquors are taken to excess, their abuse creates an exaltation of the cerebral energies, and then the mind's operations, in feeling and sentiment and intellect, are quickened in a degree proportionate to that of the excitement which increases the brain's activity. In brain-fever with acute inflammation, the violence of the mental manifestations corresponds with the violence of the disease; and when, by cold applications with proper medical treatment, the inflammatory action is subdued, the mind then recovers its natural tone; but, the feelings and intellectual powers are never completely regained, if this action is left to proceed insidiously until the brain itself and its membranes have become permanently injured. That this is found to be the case in all instances where insanity resulted from brain-fever, a superfluity of evidences has been furnished by dissection. It is quite certain, also, that any other part of the body may be diseased or even totally destroyed, and still the mental manifestations will remain unaffected, so long as the brain shall continue to be healthy. From these instances, then, may we not fairly conclude that there is a necessary connexion between the mental manifestations and the state of the cerebral textures; that, in the extreme cases of complete torpor and of excited action, the accompanying derangement of the mental manifestations is clearly referable to injury of the brain with disturbance of its functions; and that, since the instrumentality of the brain is absolutely requisite to the mental manifestations, we may infer that the alteration previously shown to be the invariable attendant upon Insanity in extreme cases, is to be traced in all others to a disordered or altered state of the cerebral organs, by a process of the clearest analogy and induction? This inference moreover receives conclusive support from the results of anatomical investigation: thus, in old cases, there is generally, if not universally, disorganization of the brain; whilst, in recent cases, disorganization of its parts rarely occurs, but the vessels of its whole surface are surcharged with blood, and thus they clearly indicate the previous existence of increased cerebral action.

Many cases, with notes of the dissections, have been adduced as evidences which confirm the foregoing deductions. Of 154 males,* 145 had extensive traces of disease in the brain or its membranes: of the remaining nine, two were idiots from their birth, one died of dysentery and another of epilepsy; the rest had not been insane for more than a few months, and they died of other diseases. Of 67 females, 62 were found with the effects of disease in the brain or its membranes: in five, no marks of previous disease were discovered. Two of these had been idiots from their birth; and, with one exception, the rest were recent cases. Altogether, these examples afford a fair illustration of what is generally found in persons whose insanity had been of considerable duration; and, at the same time, they satisfactorily confirm the theory—that increased sanguineous action, or increased nervous action, arises in the brain at the commencement of insanity.

Occasionally, there have been cases of insane persons in whom no trace of disease in the brain could be detected, even on the most careful inspection; but, from this, we ought not to conclude that in them no cerebral disease existed. We know that morbid action may continue in various parts, without leaving its effects discoverable by any "necrotomical" investigation: the most skilful anatomist cannot find any traces of cramp, neuralgy, or rheumatism, by the most minute inspection. Now, we know just as little of the anatomy of the brain as of any other part of the body; but we do know that a very trifling alteration in the cerebral system will produce the most important results; as, in apoplexy, the sudden extravasation of a small quantity of blood causes death. For this reason, it has been held to be exceedingly probable that, in those instances where no trace of disease could be found in the cerebral textures, a more intimate knowledge would enable us to distinguish its presence. Besides this, however, there is another way of accounting for the failure of anatomists to discover the effects of disease in the brain, after death from insanity.

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* These cases occurred in the practice of Sir W. C. Ellis, and some of them are given in instructive detail on the pages of his valuable treatise.

All animated beings are naturally pervaded by an active fluid essence whose separation from other elementary substances has hitherto resisted the most ingenious researches of physiologists. Hence, therefore, this essence is ranked in the group of invisible and impalpable elements: nevertheless, its existence and its agency admit of demonstration, by evidences from analogy, and by inductions founded on experience. For the reason, that it manifests itself and its operations through the nervous system, this most subtle fluid, an electric energy perhaps, is denominated the nervous principle. It exists and acts according to laws like those that regulate the existence and action of the blood; and, as the sanguineous fluid circulates through its different blood-vessels, so the nervous fluid circulates in or on its different nerves, in a profluent, confluent, or refluent course. Decidedly then, there is a nervous circulation. What the lungs and heart are to the sanguineous, that the brain and lungs are to the nervous circulation; and these two circulations are co-existent, correlative and co-extensive. Throughout the whole living frame, the sanguineous fluid distributes the supplies of organic substance: the nervous fluid distributes the supplies of vital energy, imparting the power of feeling and moving and thinking and reasoning, as it passes forwards or backwards or sideways, in circles within circles, to the textures and organs which manifest the operations of life and mind. Irregularities in the stream of nervous energy are the essential causes of many intense and inveterate diseases. As in rheumatism, cramp and neuralgy, there may be obstruction, congestion or diffusion of the nervous energy; and, from its defective or excessive distribution, many diversities of Insanity are derived and prolonged. When no disorganization or other marks of disease can be found in the brain of an insane person, his death has been occasioned by derangement of the nervous circulation—for the most part, by nervous congestion in one or more of the cerebral organs. As long then, as the nervous principle shall remain invisible and impalpable, so long will the traces of its fatal misagency continue to elude detection in the brain and in every system of the animal economy.

Some pathologists have contended that Insanity is not a disease of the brain, but of the mind itself; and that, in the same way as fever is but an attendant on fractures and various bodily diseases; so the unhealthy cerebral states that accompany insanity are but consequences from the diseased mind. Against this notion, many unanswerable arguments can be produced: thus, if such were the case, in the same way as fever would not of itself bring on a fracture, so insanity ought never to ensue where disease in the other parts of the body has caused disease in the brain by sympathy. But there are many cases wherein insanity has arisen entirely from abdominal disease affecting the brain by sympathy, and in which the insanity subsided as soon as the abdominal organs were restored to their healthy state and ceased to irritate the brain. Others maintain the notion, that there are cases where insanity must be considered solely as a disease of the mind, because instances occur where insanity is cured instantaneously by the operation of moral causes. Now, had we no cases where diseases universally allowed to be bodily were as instantaneously brought on, and cured also, by the influence of moral causes as those which are reckoned purely mental, this argument might be perfectly valid. But cases of this kind, as in asthma, toothache, and gout, are so frequent as to be familiarly known: by their occurrence therefore, the previous notion is disproved. Equally untenable is the statement, that insanity cannot be a bodily disease, because it is often determined by joy, grief, or any powerful affection of the mind. But we know full well, that each of these will not only produce bodily diseases instantaneously; we have also numerous authentic cases which show that even death may result from the effects of violent mental emotion. If it be urged that insanity is not a disease of the brain, because disease of the brain may exist without it, to a great extent, the objection may be thus answered. We know that a disease of the lungs has existed to such an extent as would have been most painful to some individuals; nevertheless, so far from the usual signs of consumption being exhibited, no disease of the lungs whatever was suspected. Yet, from this, no one would argue that consumption is not a disease of the lungs. By parity of reasoning, then, we have no right to contend that insanity is not a disease of the brain, because diseased brain does not always produce diseased manifestations of the mind. The fact, however, affords a conclusive reason for affirming, that different parts of the brain execute different and peculiar functions.

Having thus seen, that there is always some debasing alteration in the mental manifestations, during insanity; and that such alteration is accompanied with diseased action or with disorganization of the brain, in cases of insanity; we arrive at the conclusion, that Insanity is a disease of the Brain, causing an alteration in the mental manifestations. Let us next endeavour to determine the extent in which this alteration must exist before we can pronounce an individual to be insane. According to the general opinion, every insane person is totally unfit to manage his affairs, and is dangerous to society: but it can be shown, that there are as many degrees of insanity as there are of other diseases; and that, in the same way as some bodily diseases are too trifling to interrupt the ordinary course of a man's pursuits, so there are states of insanity which neither require restraint nor incapacitate a person for the various duties of life. Before it becomes necessary to treat an individual as insane by interfering with his natural liberty, we must be able to distinguish some alteration in the manifestations of his mind. Now this alteration may exhibit itself in various modes, as regards the animal propensities, the moral sentiments, or the intellectual powers; but however extraordinary it may become both in mode and degree, as long as a man's conduct, in words or actions, displays no tendency to injure himself or others, so long he possesses a right to be regarded as a free and responsible agent. His insanity can only be determined with the two-fold test—*alteration* in his mental manifestations, and *persistence* in conduct adapted to *injure* his own interests or those of others.

AN HISTORICAL SKETCH OF FRENCH LITERATURE.

I.—ON THE CORRUPTION OF THE LATIN AND FORMATION OF THE ROMANCE LANGUAGES.

> "All
> Lay wrapt in lethargy; blind Ignorance waved
> His leaden sceptre, and with cold dull touch
> Spread wide his clustering mildew."—MITFORD.

THE advances from a state of utter barbarism and ignorance to one of reason, of talents, and of mental cultivation form one of the most interesting spectacles that is presented to us in the history of mankind. What, indeed, can be more pleasing, more truly instructive, than to trace the revival of Literature from the debasement into which, after a long train of evils, it had been plunged by error and anarchy. As such, I have in this article endeavoured to give a clear and concise view of the fallen state of Literature in the sixth and four succeeding centuries; with a description of the Corruption of the Latin, and consequent formation of the Romance languages. In future articles, I shall trace the progress of these languages, endeavouring at the same time to give a just idea of the minstrelsy of the dark ages, with a glimpse of their chivalric institutions.

That latin was the language of Gaul, as far north as the Rhine, throughout Spain, and of course in Italy, during the fourth century, is a well-known fact; and though some remote provinces might still speak the old Teutonic, all legal contracts, all official documents and all sacred works were written in latin; it was, in short, the general language of the nations of the south of Europe. We have numerous proofs in support of the fact, that these nations, when subjugated by the Romans, adopted alike their language and their customs. In former centuries, we find Pliny, Suetonius, Juvenal and Martial mentioning latin prize orations at Lyons, at Bordeaux, at Marseilles, and at numerous other towns in the south of France and in Spain: in later times, we find several petitions from the Gauls to the Roman people, all in latin.

In order more fully to comprehend the reasons of the rapid decline of the Latin language in France, let us take a cursory view of its corruption and depravation in its mother country. In marking the general appearances of Roman literature from the age of the Antonines to the reign of Constantine the Great, we cannot avoid being struck with the rapid and almost uniform degeneracy and deterioration. Taste and judgment seem to have suffered in each successive attempt; and we see that the admirers of Cicero, of Horace and of Virgil found it easier to imitate their blemishes than their excellencies, and sought rather to catch the glare of their colouring than copy the accuracy of their drawing. Who can be surprised at the fate of literature, if he reviews the list of Emperors and considers the endless scenes of warfare, bloodshed, and confusion in which the Romans were constantly engaged. We find the unhappy state governed by monsters, invaded by barbarians, curtailed in extent, and, when freed from foreign scourges, torn by religious disputes and persecutions. Constantine the Great, though he deservedly claims our praise as a patron of men of letters, inflicted a fatal wound on Roman learning. In removing the seat of empire, he little foresaw that that portion of Roman taste and literature which followed the fortunes of his court would soon be superseded by the arts and language of the east, and that that portion which remained would fall an inevitable prey to the encroachments of barbarism. Influenced, however, by political motives, and blinded by the truly splendid ambition of founding a new metropolis, we may lament but can hardly censure these unexpected consequences, these involuntary mischiefs.

The most fatal and accelerating cause, however, to which we may attribute the fall of the Latin language, was at hand in the irruptions and depredations of the barbarous tribes from the north of Europe and the north-west of Asia. Carnage, rapine and bloodshed marked their footsteps, and Europe was shaken to her foundations by these terrible revolutions. It is generally found that conquest, to compensate, as it were, for its innumerable evils, brings with it some great, some permanent advantages: these barbarous hordes, however, subsisting upon the chase, possessed no agriculture, no traffic, no mechanical or domestic arts; they lived not in towns, nor could they endure to have their dwellings contiguous, but built wherever they found a spot to their fancy, and were generally attracted by a grove, a fountain, or a plain. The only known profession among them was that of arms: they disdained to remain in inaction, and courted dangers where they might acquire renown and display their prowess: the coward and the assassin were considered as equally execrable, and persons convicted of either of these crimes were immediately executed.

Such minds could not be brought to think of learning and the arts, unaccompanied with the desire to destroy them; and, but for the intervention of one of their most powerful enemies, literature must have been swept from the earth. This great enemy, or, to speak more correctly, friend, was *Superstition*. The blind worship of their idols induced a similar deference for their ministers; and in their conquests we find that they transferred this reverential feeling to the priests whom they found established there. Thus while the palace and the castle were wrapt in flames, the monastery and the convent escaped, and within the pale of the church alone did literature, in the midst of these terrible convulsions, find a shelter and repose. It might, under such circumstances, have been reasonably supposed that, by the priesthood at least, Latin would have been preserved as a living and established idiom: the reverse was, however, the case, and instead of teaching a language, they were content to learn a colloquial jargon, a mixture of the Latin with the harsher dialects of the barbarians.

Having thus seen the decline of the latin language in its mother country, let us return to France, where, at the commencement of the seventh century, we find no less than three languages current, namely—the Latin, which, though much corrupted, still continued the official language; the ancient Celtic or Frankish, which was, however, soon extirpated, and a new idiom, a mixture of the Latin with the dialects of the northern tribes. This latter soon became the general language of the people, and was, in consequence, universally cultivated. Towards the middle of the eighth century, we find a considerable progression in this language; this improvement proved, however, but transient, as at the commencement of the ninth century we find a great deterioration, which continued almost uniformly until the commencement of the eleventh century.

Charlemagne, whose powerful mind eagerly grasped at every means of improvement, whether physical or intellectual, made a noble though ineffectual stand against the invasions of barbarism and the encroachments of ignorance. He founded colleges and public schools in all parts of his dominions: his example was speedily followed, and in a short time there was not a cathedral, a convent, and scarcely a church of any eminence without one; but, numerous as were these seminaries, within their walls little was taught that tended to make a useful citizen or a happy individual; an education for the purposes of active life shared not part of their solicitude. The only existing professions were the military and the theological; those destined for the former seldom frequented or soon left these schools for a more appropriate academy in the baronial hall; the latter class continued long in the trammels of discipline; and if they did not leave them better and wiser, we can only attribute it to the lamentable ignorance and the culpable negligence of their teachers.

Whether Charlemagne had himself any pretensions as a scholar is uncertain; but as he was taught grammar, which had then a very extensive signification, under Peter of Pisa, and could relish the society of Alcuin, the balance inclines evidently in his favour. But whether he himself possessed learning or not, he duly appreciated and generously patronized those who did. He pensioned men of letters, associated them to his cabinet, and admitted them to his table. Peter of Pisa, Paul the deacon, Theodulf bishop of Orleans, with numerous other men of letters now unknown, but eminent in their day, were munificently rewarded. The Anglo-Saxon Alcuin, whose name, if not his merits, is more familiar to us, will be thought rewarded to the full extent of his merits, in the possession of three abbeys and twenty thousand slaves. The literary labours of Eginhart, his secretary and biographer, were crowned with the more valuable gift of a daughter.

By order of Charlemagne was compiled a grammar of the German language, which, with the Latin, was then the language of his court; he does not, however, appear to have taken any notice of the popular dialect, which, in acknowledgement, as it were, of its Latin origin, was called *Romane* or *Romance*.

The earliest known specimen of Romance is the oath taken, at Strasburgh, A.D. 842* by Lewis of Germany to Charles the Bald, when they conspired against their eldest brother, the Emperor Lothaire; there are also some poetical fragments of nearly the same date, though their authors are now unknown. Thus we find that, in the beginning of the ninth century, France possessed (what Italy did not yet) a popular dialect subjected to certain grammatical rules, employed in official documents, and serving to express in poetry the popular opinions, passions, and prejudices.

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* We subjoin the oath as a specimen of the Romance:—

"Pro Deu amur et pro christian poblo et nostro commun salvament.

"Diest di en avant in quant Deu savir et prodir me dunat si salvarai jo cist mein fradre Karl.

"Et in adjudha er in cadhuna, cosa si cum om per dreit son fradre sarvar dist in o quid il me altrezi forzet.

"Et ab Ludher nui plaid nunquam prindrai qui meon voi cist meon fradre Karl id damno sit."

But, though under the well-judged patronage of Charlemagne, literature was aroused from her lethargic slumbers, though under his jurisdiction religion was reverenced, the laws enforced, colleges opened for the instruction of the young, and pensions for the remuneration of the aged, we find that after his death the rising light of literature was quenched, and repulse and disrespect were the only rewards that literature and the arts received from the haughty barons and the licensed banditti of the tenth century. If we suppose for a moment, genius alive and emulation active, what could letters do in such a degraded state of society, and when the sword opened the only way to distinction, the silence and extinction of literature necessarily followed? The epithets of the dark, the iron age may well be applied to the tenth century; and one would turn with disgust from the consideration of its enormities, were it not attended with the reflection that the barrier was passed and that every future change must be an improvement.

Amidst these complicated distresses learning must have been inevitably destroyed but for the preservation of its choicest volumes in the conventual libraries; manuscripts thrown together by accident gradually accumulated into libraries, which the abbots were disposed to value though almost always unable to use. Three centuries after, when the spirit of literature was again aroused, transcribers appeared and the works of the immortal classic writers were no longer suffered to moulder in the cells; thus, amid the disorders of the times, did learning receive this silent though useful homage, and to their obscure and humble diligence the learned of every subsequent period must ever be deeply indebted.

But of evils and of misfortunes, though there be an excess, in time there must be an end. At length, the tide of northern barbarism was spent, and external ravages ceased; but four centuries of revolution and disorder had completely changed the face of Europe, and their effects are visible in the tenth century. The conquests of the barbarians appear uniformly to have subsided into the feudal government, which founded, as it was, on the basis of self-defence, sprung naturally from their precarious situation. Nothing, however, would be more repugnant to the genius of improvement: it established over Europe the dreadful oriental system of castes, struck at the root of royalty, or rather of all legal subordination, perpetuated slavery, scattered the seeds of civil war, and in the end deluged every kingdom with blood.

Without, however, dwelling on the degradation and degeneracy of the tenth, let us pass on to the eleventh century. At this period we find the original Romance subdivided into two great branches or dialects, that spoken to the north of the Loïre (their common boundary) was called the Romance Wallon,* while that used in the southern provinces was the Romance Provençal. These dialects, though founded on the same basis, the ancient Latin, were very different, and the dissimilarity became every day more apparent. In a country favoured by nature, under a serene sky, where the genial warmth of the atmosphere enlivens the imagination without enervating the body, the Provençal was soft-flowing and harmonious. The Romance Wallon, on the contrary, adulterated by a mixture of Frankish and Norman words, was harsh and dissonant. The rise of the Provençal may be dated from the commencement of the eleventh century: while it is from the twelfth century that the Wallon became a literary language. We have no literary monuments, no poems, no songs, which show the Wallon in its primitive state. The earliest specimen possessed by us is the code of laws imposed by William the Conqueror upon his English subjects. In Normandy, the Wallon appears to have acquired a more grammatical form and a greater polish than in any other French province ; William the Conqueror was much attached to it, encouraged it greatly among his Norman subjects, and even introduced it into England, where the people were forced by rigorous punishments and severe enactments to adopt it, in preference to their native language.

Having thus given a faint sketch of the decline of Roman learning, an imperfect memorial of the degradation and degeneracy of the tenth century, and having thus followed learning to the last stage of its depression, we will reserve for a future article the more grateful task of tracing its revival, and stating the apparent causes, their operations and effects.

CRITES.

[*To be continued.*]

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* The Wallon was called *Langue d'Oil* or *d'Oui*, and the Provençal the Langue d'Oc, from the affirmative word of each nation, as the Italian for the same reason was *Langue de si*, and the German *Langue de ju.*—SISMONDI.

REMARKS UPON THE PRESERVATION OF TIMBER.

The perishable nature of timber when used in the construction of edifices, and the most effectual and expeditious means of preventing its decay, has been a subject of vast interest and importance to the architect. The processes hitherto used of steaming or boiling to create a speedy evaporation of the watery part,—"impair the strength and elasticity of the timber," is tedious and attended with much expense, and does not counteract the action of those causes of decay which are inherent in wood and all organized bodies.

Decay in timber arises from various causes; if it commence while the tree is standing, it is indicated by the death of some of the upper branches; by cracks and openings in the trunk, probably from the infiltration of water into the interior; and often by an unsound root. This kind of decay, which extends from the heart outwards, continues slowly in operation after the tree is cut down. But though this decay is of importance, as there exists an effectual remedy, viz. of cutting down the tree before it has reached its maturity, it is unnecessary to speak further of it.

Decay may commence in sound timber from alternate exposure to changes in the weather—to heat and cold—to moisture and dryness. In this case, the process commences outwardly; and painting or covering the exposed parts with a coating of tar, &c. in some instances has prevented, for a time, the progress of this decay, which is termed the common rot.

As in the common rot, the causes of decay are extrinsic, and are principally brought into action in those parts which are exposed to the vicissitudes of the weather; widely different are they from those which produce what is commonly termed the dry-rot. The causes which produce this malady are the action of natural properties dispersed in the outer layers or vegetable parts of the wood, whose decomposing operations soon proceed to the internal layers until the whole structure becomes involved.

The primary cause producing this disease is the heat accompanying the fermentation of the albumen rousing into action the germs of the fungi; this vegetable structure, from its nutritious principles being afterwards hollowed out by insects, permits the access of air and moisture into the interstices, and produces what is properly termed the sap-rot, since its elements chiefly abound in the outer layers of the wood.

The most effectual means of preventing, or, more properly speaking, suspending the causes of decay which are inherent in wood and all organized bodies, is effected by Mr. Kyan's method of applying a solution of corrosive sublimate, which penetrates deeply into the wood, and by solidifying or coagulating the albumen, thus prevents the commencement of the fermentation, and the development of fungi, which are not the cause of the sap-rot, as maintained by some, but the incidental accompaniments, owing to their mucilaginous or saccharine principles.

The results from numerous experiments proving the durability that this process confers upon timber are now becoming generally known. The encouragement it receives from eminent professional men, who are using it in executing their large public works, tends to convince us of its utility; but *time* alone will show to the world what is the value of this great invention.

AN ARCHITECT.

SKETCHES OF EUROPEAN ORNITHOLOGY.

Gould's "Birds of Europe."

Parts Fifteenth and Sixteenth.

Part XV.—The first plate presents us with a rare species of Eagle, one of the smallest, but not the least typical of the genus *Aquila;* viz. the Booted Eagle, *Aquila pennata,* Steph.—Aigle bottè, *Fr.* Eastern Europe and the adjacent portions of Asia constitute the habitat of this interesting bird; but it is said to migrate annually into Austria, Moravia, and the eastern part of the German territories. M. Temminck says that it breeds on the Carpathian mountains. The figure represents the bird of the natural size, and this is much less than that of the Common Buzzard. The attitude we cannot admire: the breadth of shoulders alluded to in the description is not given in the figure; there is no freshness or spirit in the drawing; the port and aspect are not those of the daring, the impetuous Eagle.

Rustic Bunting, *Emberiza rustica,* Pall.—Bruant rustique, *Fr.*

A beautiful figure of the male and female, delineated with the usual felicity of Mr. Gould's pencil. At a first glance, this rare species might be mistaken for the Reed Bunting; but the slightest examination would serve to discover the difference. The Rustic Bunting is one of the birds which have at best a doubtful claim to a place in the fauna of Europe. Siberia, Kamtschatka, and the adjacent isles constitute its native abode: it is said, however, to have occurred within the limits of the north-eastern frontiers of our continent. Of its history nothing is known; but we may reasonably conclude that its habits resemble those of the rest of the genus. Mr. Gould informs us that his figures were taken from specimens in the Museum at Frankfort.

Oystercatcher, *Hæmatopus ostralegus*, Lin.—Huiterier pie, *Fr.*—Geschackte austernfischer, *G.* The figure of this bird is of the natural size. Though tolerably good, it is not one of the best of Mr. Gould's efforts: the attitude is awkward, and does not convey the idea of an active swift-footed bird tripping along the sands, "and yet no footing seen." The Oystercatcher is a species very widely diffused and well known to naturalists. It frequents various parts of our shores, its favourite spots being low sandy beaches, from which the tide retires and upon which it finds its food, as mollusks, crustacea, &c. The strength and shape of the bill admirably fit it as an instrument for detaching Limpets from the rocks, or for insertion between the valves of Mussels, Oysters, and the like. This handsome bird is no less distinguished for sweeping velocity on the wing than for activity on the shore: it also swims with great facility, and is even capable of diving. Wilson observes of the American species —which, by the bye, he confounded with that of Europe—that, when wounded, it not only takes to the water and swims, but that it also dives well; and he adds the following:—"On the sea-beach of Cape May, not far from a deep and rapid inlet, I broke the wing of one of these birds, and, being without a dog, instantly pursued it towards the inlet, which it made for with great rapidity. We both plunged in nearly at the same instant, but the bird eluded my grasp and I sunk beyond my depth. On rising to the surface, I found the bird had dived; and a strong ebb current was carrying me fast towards the ocean. Encumbered with my gun and all my shooting apparatus, I was compelled to relinquish the bird and to make for the shore, with considerable mortification and the total destruction of the contents of my powder horn. The wounded bird afterwards rose and swam with great buoyancy out among the breakers." Mr. Gould states, that the female Oystercatcher deposits her eggs (four in number), among the shingles; and that while "engaged in the task of incubation, the male keeps assiduous watch and gives notice of the approach of danger by a peculiar kind of whistling cry." Wilson says of the American species, that "the female sits on her eggs only during the night, or in remarkably cold and rainy weather: at other times the heat of the sun and of the sand, which is sometimes great, renders incubation unnecessary." The parent birds are very solicitous in behalf of their young, and, like the Lapwing, wheel round the intruder's head, uttering repeated cries, and counterfeiting lameness or incapability of flying very far, in order to draw him on to the pursuit, and thus lead him from the spot where their young are crouched. The species described by Wilson, is the *Hæmatopus palliatus*, Tem. *H. Braziliensis*, Licht. It is widely distributed over the American continent.

Azure Tit, *Parus Cyanus*, Pall.—Mésange azurée, *Fr.* Delicate little creatures! There they are, peering among the leaves in search of insects, and clinging to the slender spray of the birch, unbent by their weight, unshaken by their actions! Who would think that these little beings were fitted to tenant the regions of Siberia, and endure the cold of winter in these joyless realms of snow? Yet so it is. Their presence enlivens the gloomy recesses of the forests of Siberia and Russia, where man seldom ventures to intrude upon their quiet. Their nest and eggs are unknown. The only specimens in England are those from which the lovely drawings were taken; and they were obtained through the liberality of the Directors of the Royal Museum of Berlin. Of the restricted genus *Parus* nine species are indigenous in Europe, and six in North America.

Black Guillemot, *Uria Grylle*,—Guillemot à mirroir blanc, *Fr.* —Der Schwarze Lumme, *G.* The plate gives a characteristic figure of an adult, and also of an immature bird, of the natural size. This species of Guillemot is most abundant in high northern latitudes, and particularly along the coasts of the Baltic: it is also common in the polar regions of both continents. Frequents the north of Scotland and the adjacent isles; it is not often seen on the coasts of England, where the Foolish Guillemot (*Uria Troile*, Lath.) swarms in thousands; and still less frequently does it occur on those of Scotland or of France. "The northern parts of Scotland, and the Orkney and Shetland Islands (says Mr. Gould) form a place of general rendezvous for the Black Guillemot, which being less migratory in its habits than its near ally, the Foolish Guillemot, seldom quits those isolated groups, whose bays afford it shelter during the stormy season of winter, and whose abrupt precipitous cliffs are equally inviting as a site for incubation. On the ledges of these rocks it deposits its single white egg spotted with black : the young are hatched in about three weeks, and shortly after are conveyed, but by what means is unknown, to the water, an element to which they are so expressly adapted, that their are enabled to swim and dive with the utmost facility the moment they arrive on its surface, and to brave with impunity the rough seas which are so prevalent in the northern latitudes. After the process of re-production is over, the adults are subject to a considerable change in the colour of their plumage, apparently caused by a general moult, even to the primaries which are so simultaneously lost, that the bird is, for a considerable period, deprived of the power of flight." The winter dress of the adults is mottled black and white, the latter prevailing. The young birds have the feathers white margined with black; and the white spot on the wings, invariable in the adults, is spotted also with black.

Hyacinthine Porphyris, *Porphyris hyacinthinus*, Tem.—Taléve porphyrion, *Fr.*—Purple Water-hen, Edwards. A bold and striking figure of a most remarkable and richly coloured bird. The birds of this genus are closely allied to the Coots and Gallinules, and their manners are, to a certain extent, the same. The species represented in the plate is a native of southern and south-eastern Europe, and the adjacent portion of Africa. In former times, among the Greeks and Romans, it was in high esteem on account of its beauty ; and in modern times has received the name of *Poule Sultane*, or Sultana, for the same reason. It frequents the marshy borders of lakes or rivers, and is very abundant in marshy rice grounds ; in the swamps of Sicily, Calabria, the Ionian Islands, and the whole of the Archipelago, and in the Levant, it is very common. Its food consists of grain, seeds, and aquatic plants.

Common Crossbill, *Loxia curvirostra*, Lin.—Bec croisé commun, *Fr.*—Fichten kreutzschnabel, *G.*—Crosicro, *It.* Two very characteristic figures, representing an adult in its olive-coloured dress, and a young of the year in its evanescent roseate livery. The Crossbill is not a permanent dweller within the limits of our island, though a few instances are on record of its having bred with us ; it visits us, however, both in the autumn and spring, and sometimes (as in the months of June and July, 1821) in great multitudes. It is singular that the richest plumage of this bird should be that of immaturity. Mr. Gould observes, that doubts exist in the minds of many as to whether the rosy red colouring be characteristic of the breeding season, or whether it be the permanent livery of the adult male; and adds the following: "During our recent visit to Vienna, we had an opportunity of observing both sexes in every stage, an examination of which afforded us abundant proofs that the red plumage is acquired during the first autumn: for we saw many lately fledged that had their plumage thickly spotted; others that had partially lost their spotted appearance and had partly assumed the red colouring; and others that had their feathers entirely tinted with this colour; while the *adults* were, as most ornithologists have stated, characterized by a plumage of *olive green*, which appears *to be permanent*." The nest of the Crossbill is placed in the fork of the topmost branches of the fir and other trees, and is composed of moss and lichens, generally lined with feathers; the eggs are four or five in number, of a greyish white, marked at the larger end with irregular patches of bright blood red, the remainder minutely speckled with the same colour. Besides the present species, which is a native of the northern regions of the old continent, another, the *Loxia pytiopsittacus*, Bechst. is also indigenous in northern and central Europe, while two are natives of North America, viz. the *Loxia Americana*, Wils. and the *Loxia leucoptera*, Gmel. which last is accidental in northern Europe.

Greenshank, *Totanus glottis*, Bechst.—*Glottis chloropus*, Nils.—Chevalier aboyeur, *Fr.*—Grunfussiger wasserlaüfer, *G.*—Plantana verderello, *It.* The easy and natural attitude of the figure representing this elegant species of Sandpiper is happily managed, and the effect of the whole is very pleasing. The Greenshank is a well-known species, and is very widely distributed, being spread over the whole of India, Africa, and Europe. It does not appear, however, to breed in the British island, but visits us in considerable abundance during its vernal and autumnal migrations. According to Mr. Audubon, it is a native of the southern parts of North America. It would appear, however, that the American Greenshank, though very close to that of the old world, is in reality a distinct species, and it has been characterized by Prince Charles Lucien Bonaparte under the title of *Glottis Floridanus*.

Snowy Owl, *Strix Nyctea*, Lin.—*Surnia Nyctea*, Dum.—Chouette harfang, *Fr.*—Schneekauz, *G.*—Alucco diurno, *It.* A magnificent plate of a magnificent species! Two figures, an adult, and a young bird in immature livery, about one-third the natural size, are spiritedly drawn, and the composition of the whole is very masterly; it is one of Mr. Lear's best efforts. If not strictly indigenous in the

British islands, this noble Owl is more frequently to be met with in Scotland and the adjacent counties than was formerly suspected. Its true habitat, however, is within the arctic circle of the old and new world. From these bleak realms it migrates southward; and it would appear to visit more southern latitudes in America than in Europe. Daring, impetuous, and fierce, this "playmate of the storm" commits havoc among the tenants of the snowy mountains; Alpine Hares, Grouse, and even Foxes fall victims to its rapacity. "The indefatigable Wilson informs us that it is a dextrous fisher, pouncing upon its finny prey and securing it by an instantaneous stroke of its foot: and Dr. Richardson states, in the second volume of the *Fauna Boreali-Americana*, that he has seen it pursue the American Hare, making repeated strokes at the animal with its foot. It hunts in the day, and, indeed, unless it could do so, it would be unfit to pass the summer within the arctic circle." The habits and manners of this species are, in fact, more those of the Falcons or Eagles, than of the *Strigidæ* generally; and the changes in its plumage are precisely similar to those of the Gyrfalcon. During the first three or four years the plumage is barred with brown, which markings become gradually indistinct as the bird advances in years, till in the old males the plumage is pure white. In the fur-countries, the Indians, and even white residents, regard this Owl as good eating, especially in the winter, when it becomes very fat. The flesh is delicately white.

Red Grouse, *Lagopus Scoticus*, Lath.—Tetras rouge, *Fr.* As we gaze on these admirable figures of the Red Grouse, the remembrance of the moorlands comes upon us—the moorlands bleak and bold, with their deep glens and swelling hills all covered with Heath and the Bilberry plant, where the Grouse makes her bed and covers her crouching brood. Too well known is this celebrated bird to require any observations: we cannot, however, forbear remarking that it is peculiar to the British Islands; it has never been found on the continent—it is exclusively our own; and may it never be extirpated from our moorlands by the wholesale destroyers of game, whose boast is not in their skill, but in the number of birds they kill in a given time, where the *packs* are thick and the birds tame and unsuspicious.

The Black Kite, *Milvus ater*—Milan noir, ou Parasite, *Fr.*—Schwartzer Milan, *G.* Mr. Lear's figure of this Kite is very good; the attitude is easy and natural, but the head does not quite please us—it seems as if pushed down, as if the size of the stone had prevented the artist from completing his outline as originally designed.

—The Black Kite is not indigenous in the British Islands; yet, as Mr. Gould observes, "judging from its extraordinary powers of flight, and from the wandering habits of the generality of the *Falconidæ*, it is not improbable that it may have penetrated so far west as our island, and have been mistaken for the common species." It is abundantly distributed over Germany, France, Switzerland, and the European countries bordering the Mediterranean sea.

Bar-tailed Godwit, *Limosa rufa*, Briss.—Barge rousse, *Fr.*—Rostbrauner wasserlaufer, *G.* We do not admire this plate. The bird in its summer dress is badly drawn, and the perspective utterly wrong; indeed there is no perspective at all. The bird in question is standing on a bank, apparently at a very considerable distance, and dipping its bill in a piece of water, not close to the brink, but half-a-mile out, or nearly so: while on another bank, a good bow-shot (in true perspective) beyond the first, stands a bird in its winter dress, rather larger than the bird in its summer dress. Both are stated to be of the natural size, yet they are on a distant landscape. If our readers consult the plate, they will not think us hypercritical. However, in the midst of so much to admire, we may well pardon worse faults: indeed, it is because the plates in general are so beautiful that a faulty one is the more startling. In other works, this very plate would be deemed good.—The native haunts of the Bar-tailed Godwit are the high northern regions of Europe, whence it migrates southwards in autumn, and whither it returns in spring. It visits our island during its vernal and autumnal travels, and some few individuals sojourn with us during the winter, tenanting the mouths of rivers, creeks, low muddy shores, and marshes along the coast. Its summer plumage is rufous varied with brown; in winter its dress is grey pencilled and dashed with dusky brown. In Holland, this species abounds in winter, and also on the coast of some parts of France. From the former country our markets are supplied with these and other waders during the winter season. Its parallel on the American continent is the *Limosa Fedoa*, Vieill.—Aud. plate 238. The *Limosa Hudsonica* there represents our Black-tailed Godwit, *L. melanura*.

Alpine Accentor, *Accentor Alpinus*, Bechst.—Accenteur pegol, ou des Alpes, *Fr.*—Alpen fluevögel, *G.* Of the genus, *Accentor*, three species are European; namely, *A. Alpinus*, *A. modularis*, and *A. montanellus*. An undescribed species, Mr. Gould observes, inhabits the Himalayan mountains; none are American. The present plate presents two figures of the Alpine Accentor, of the natural size, both excellently drawn. Though this species is strictly a native of the Alpine districts of continental Europe, several specimens have been taken in England, and that not in our rocky provinces, but at or near Cambridge, in the midst of a low flat tract of country, little adapted, one would suppose, for the sojourn of a bird whose congenial residence is among the bold rocks and cliffs of the Tyrol, the holes and fissures of which afford it a place of nidification. Its eggs, like those of our Common Accentor, (or Hedge Sparrow), are greenish-blue. The casual visit to our island of birds not possessing powers of rapid flight, birds not strictly migratory in their habits, and natives of a distinct locality, is very remarkable, and not easily accounted for. In the present instance, we have a bird peculiar to central and southern Europe finding its way westward to our island, led thither by some train of circumstances which we cannot well comprehend. Mr. Selby figured a specimen killed in the garden of King's College, Cambridge, and now in the museum of the Rev. Dr. Thackery ; but he does not inform us at what part of the year it was obtained, nor does Mr. Gould advert to this important point.

Twite, *Linaria montana*, Ray.—Grosbec á gorge rouge, *Fr.*—Arktische fink, *G.* The plate represents a figure of this pretty little bird, chastely drawn, true and natural. Small birds, by the way, are Mr. Gould's *forte.*—"The Twite, though possessing a longer tail than the Linnet, has a more delicate contour of body, and is, as we think, a more diminutive bird. In this respect our opinion is not in accordance with that of Mr. Selby, who states 'it is rather larger than the Common Linnet, being bulkier in the body and having a longer tail.'" The habits and manners of this bird resemble those of the Common Linnet, which bird it closely resembles in general appearance. "It is abundantly dispersed over the northern portions of Europe, even within the regions of the arctic circle. It also passes the summer, but in smaller numbers, on the uplands of Scotland, the Western, Orkney, and Shetland Islands." Mr. Selby says that it breeds in these places, its nest being built "amid the tops of the tallest Heath, lined with wool, fibres of root, and the finer parts of the Heath." The eggs, five in number, are of a pale bluish-green colour, spotted with pale orange brown.—In autumn it leaves the mountains of the Scottish main-land and isles, and, joined by flocks from Norway, Sweden, &c. joins the Common Linnet and travels southward. Taken in company with this bird, by the London bird-catchers, it is easily distinguished from the Linnet by its note, expressive of the word *twite*, whence its English name.

Short-toed Lark, *Alauda brachydactyla*, Temm.—Alouette à doights courts, *Fr.*—Die Kurtzehige Lerche, *G.*—La Calandrelle, Bonelli, in *Mem. de l'Acad. &c. Turin.* Two beautiful figures!—The Short-toed Lark, with the *Alauda calandra*, the *Alauda bimaculata*, and the *Alauda tartarica*, may be regarded as constituting a distinct sub-generic group, distinguished from the typical Larks—the Sky Lark for instance—by the more powerful and robust form of the bill, and by the comparative shortness of the toes.—This group has received the title of *Melanocorypha*, Boié. Of the four species, all inhabit southern Europe, with the exception of the *Alauda tartarica*, which is a native of the high northern latitudes.—The Short-toed Lark abounds in the hot plains of the Spanish peninsula; it is also found in France, Italy, Sicily, and the north of Africa. Like the Larks of the restricted genus *Alauda*, it makes its nest on the ground. The eggs are plain, of a pale Isabella yellow.

Dalmatian Pelican, *Pelicanus cuspus*, Feldegg. The drawing of this bird is by Mr. Lear, with all the spirit and all the mannerism of that artist; the beauties, however, prevail over the defects: it is a striking and effective plate.—The Common Pelican, *Pelicanus Onocrotalus*, and the present are the only two species which can be placed in the list of the Fauna of Europe. Two species, *P. trachyrhynchus* and the *P. fuscus*, are found in America. It is but lately that this noble bird has been discovered and characterised; well, therefore, may Mr. Gould say: "A bird of such striking magnitude as the present having so long escaped observation, even on the shores of Europe, what may we not expect from those more distant countries, to which the scrutinizing eye of the naturalist has seldom penetrated! Although this species has been introduced to the notice of the scientific within the last few years only, it has doubtless long abounded where it is now found. The specimen from which our figure was taken was sent us by Baron de Feldegg, and was one of twenty-four killed by him on the shores of Dalmatia. In the letter which accompanied this specimen the Baron thus writes: 'The first example of this bird that came under my notice, was shot by myself in the year 1828, in Dalmatia, and was sent to the imperial cabinet in Vienna. Two years after this, Messrs. Rüppell and Kittlitz met with this species in Abyssinia, where, however, it would appear to be very scarce, as those gentlemen procured only a single specimen. In the year 1832 I published a description of it, under the name of *Pelicanus crispus*. The *Pelicanus crispus* has undoubtedly escaped notice in consequence of no naturalist having seen both species (viz.: this and the

P. onocrotalus) together, as I have in Dalmatia, where it arrives in spring and autumn, and where it gives preference to the neighbourhood of Fort Opus, on the river Naranta, which is bordered with morasses. It comes through Bosnia, seldom alone, but generally in flocks. I have seen as many as twelve together hunting for fish : it is very cunning and extremely difficult to shoot. I obtained, at different times as many as twenty-four examples." The *Pelicanus crispus* differs from the Common Pelican in possessing a beautiful crest and mane of narrow elongated silky feathers ; in the naked space round the eye being smaller ; in the feathers of the breast being stiff, lanceolate, rounded at the points, and of an elastic texture; in the body being more bulky and larger in all its proportions ; and in the tarsi being stouter, of a different colour, and considerably shorter." The crest, however, appears to be a variable character, as Baron Feldegg says :—" At all seasons of the year old birds may be found both with and without the crest. I saw a specimen in M. Aker's menagerie which had always had it, while a bird of the same species in another menagerie had none ; in all other respects they were the same, and were very healthy, and I possess a female in which the ovaries were largely developed, and which has a large crest covering the whole of the head ; which circumstance induces me to conclude that it is a very old bird."

Yellow-breasted Bunting, *Emberiza aureola*, Pall.,— Bruant auréole, *Fr.* Two beautiful figures, representing the male and female of this rare and elegant Bunting.—The native habitat of this species is Kamtschatka, Siberia, and the Crimea ; its claim to a place among the list of British birds rests on the circumstance of its having been killed a few times within the precincts of our island. Its habits and manners are little known, but no doubt resemble those of its congeners. It is the *Emberiza Sibirica*, Nov. Comn. Petr. v. 15, p. 488.

The Whistling Swan, or Hooper, *Cygnus ferus*, Ray,—Cygne sauvage, *Fr.*—Der Singschwan, *G.*—Cygno salvatico, *It.* The figure of this bird, by Mr. Lear, is bold and masterly ; the neck, however, might be improved : it is too much like a jug handle. Four Swans are indigenous to Europe : 1st, the Tame Swan, *Cygnus olor*, originally from north-eastern Europe.—2nd, a very close ally, distinguished, among other things, by the permanent pale fleshy white colour of the bill and legs. It is the *Cygnus immutabilis*, Yarrel, and has been very lately characterized. It inhabits the north of Europe, and is a not unfrequent winter visitor to our island.—3rd, *Cygnus ferus*, Ray. *Anas Cygnus*, Linn. the species represented in the plate under present notice.—And 4th, Bewick's Swan, *Cygnus Bewickii*, Yarr. a native of Europe generally, and differing from the Whistling Swan in being less in size, in the form and markings of the bill, in having eighteen instead of twenty tail feathers, and in the greater extent to which the trachea extends into the body of the sternum.*—Selby states that both the *Cygnus ferus* and the *Cygnus Bewickii* are natives of the northern parts of America. This, however, is not the case. The two Wild Swans of North America are the *Cygnus Americanus*, Sharpless, and the *Cygnus buccinator*, Richardson; both of which are allowed to be perfectly distinct from their European relatives.—Of the habits and manners of the Whistling Swan, or Hooper, nothing need be said. It is an annual winter visitor to our island, frequenting rivers and sheets of water, often in considerable flocks; and the vast numbers both of this species and *C. Bewickii* seen and shot in England during the late winter, 1837–38, may be regarded as affording an index of the severity of the season in the higher latitudes, whence they were driven southwards in multitudes.

Black Scoter, *Oidemia nigra*, Flem.—Canard macreuse, *Fr.*—Die Trauer-ente, *G.* The figure of this well-known species is very characteristic: it represents a male, of the natural size, tranquilly floating on the water, from the depths of which it obtains its prey.—A native of the arctic regions, the Black Scoter visits our seas and those of Holland, France, &c. in great numbers, during the autumnal migrations of the flocks southwards, and again in the spring, on their return to the north: numbers also stay with us during the whole of the winter, and take their departure with the return of spring, when the morasses and lakes within the arctic circle, undisturbed by man, are unlocked and offer an asylum. Like the rest of the section of oceanic Ducks to which the present belongs, its flesh is nauseous and unfit for food. It subsists principally on bivalves, as the Common Mussel. We have often examined the gizzard of this bird: it is lined internally with a strong tough coriaceous membrane of considerable thickness; its muscular parietes are of prodigious depth and solidity: the whole forms a mill, of which the two parts work upon each other, grinding between them the enclosed Mussels and crushing them to pieces.

Green Sandpiper, *Totanus ochropus*, Temm.—*Tringa ochropus*, Gmel.—Le Chevalier cul blanc, *Fr.*—Punktierte strandlaüfer, *G.*—

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* See Yarrell, in *Trans. Linn. Soc.* 12, 445.

Culbianco, *It.* The figure of this bird is tolerably good, but the perspective of the ground it stands upon is out altogether. It is represented on the same plate with its close ally, the

Wood Sandpiper, *Totanus glareola*, Temm.—Le Chevalier sylvain, *Fr.*—Wald Strandlaüfer, *G.* The Green Sandpiper certainly breeds with us, at least occasionally, and probably more frequently than is suspected. It has been observed in Wales during the summer, frequenting the small mountain streams in the neighbourhood of Snowdon and elsewhere; but we are not aware that its nest has actually been found. It is one of our autumnal visitors, and gives preference to secluded ponds, rivulets, and marshy places, instead of the mouths of rivers or the sea-beach, to which most other members of the family resort. Its range of habitat is very extensive: it is "dispersed over the whole of Europe, the greater part of Asia and Africa, but is not found in America, its place there being supplied by a totally distinct species," viz. *Totanus chloropygius.*—"It differs from the Wood Sandpiper in its large size, its shorter tarsi, and in the more diminutive spotting of the upper surface."—"The Wood Sandpiper is still more rarely seen in the British Islands than its near ally, but in every other particular the history of the preceding species is applicable to the present. It is, however, even more widely dispersed, as is proved by its being found not only over the whole of the Asiatic continent, but in most of the islands of the Pacific Ocean also, which we believe is not the case with the Green Sandpiper." The *Tringa solitaria* of Wilson, a native of the United States, differs from the present species only in having the two middle tail-feathers of a uniform brown tint; while in the *T. glareola* they are alternately barred with brown and white.

Gorget Warbler, *Calliope Lathami*, Gould—La Calliope, *Fr.* A lovely drawing of the male and female of this rare and elegant species of Warbler, which Mr. Gould regards as the type of a distinct genus, to which he has given the title *Calliope.*—"Among the sub-divisions into which the *Sylviadæ* are now distributed, we do not find one," he observes, "to which we can strictly refer the present beautiful bird: we have, therefore, ventured to form a new genus for its reception, taking the specific designation of Pallas for its generic designation. We cannot perceive its immediate relationship to the Accentors, to which M. Temminck has referred it. Both Gmelin and Latham have considered it to be a Thrush, (*Turdus*); but although not ranging with any established genus of that family, its form is very similar to some of the smaller species of that group. In the silky character of its plumage, in the presence of the gorget, and in the great difference between the sexes, it evinces a close affinity to the Blue-throated Warbler, *Phœnicura suecica ;* but in its general contour it approximates to the Nightingale, *Philomela luscinia,* to which we consider it to be most nearly allied."—The Gorget Warbler is scarcely to be regarded as a native of Europe; indeed it has been occasionally only taken within the borders of our portion of the globe. Its true habitat is north-eastern Asia and the island of Japan. It is said to have an agreeable song. The rich scarlet gorget which adorns the male is wanting in the female, whose general tint is olive brown.

Barrow's Duck, *Clargula Barrovii,* Swains. et Richards. This rare and beautiful Duck is figured with admirable fidelity and taste. A male of the natural size is represented resting on the water in an attitude at once easy and spirited.—One instance only is on record of this Duck having been killed in England. It is a native of the northern regions of America, and was first described in the *Fauna Boreali-Americana,* by Dr. Richardson, who observes:—"Notwithstanding the general similarity in the form and markings of this bird and the Common Goldeneye, the difference in their bills evidently points them out to be distinct species. Exclusive of other characters, the Barrow's Duck is distinguished by the purer colour of its dorsal plumage, and the smaller portion of white on its wings and scapulars. Its long flank feathers are also much more broadly bordered all round with black.—The specific appellation is intended as a tribute to Mr. Barrow's varied talents and his unwearied exertions for the promotion of science."

Blackthroated Thrush, *Turdus atrogularis,* Temm.—Merle à gorge noir, *Fr.* The plate represents a male and female of the natural size. The figures of each are admirably drawn: we know not which most to admire; both are perfect, and the composition of the piece is very happy. This beautiful Thrush, distinguished by its black gorget, is common in the Himalayan range of mountains, but can scarcely claim a place among the birds of Europe. M. Temminck states it to be a native (rare, we presume) of Hungary and Russia, and as occasionally occurring in Austria and Silesia. Mr. Gould says, "we have only seen two specimens killed in Europe, which are in the collection at Vienna, and one of them was, we believe, killed in the neighbourhood of that city." Of the manners of this elegant bird we have no accounts.

The Yellow Bunting, *Emberiza citrinella,* Linn.—Bruant jaune, *Fr.*—Goldhammer, *G.* A pair of these well-known, but most elegantly-attired birds are delineated with the pencil of truth and delicacy. One would almost fancy them about to take wing.—Of the Yellow Bunting we need say nothing. Who does not know it?—who has not admired it perched on the road-side hedge, along which it flits as you approach, from distance to distance, and still not far away, as if desirous yet too timid to be noticed? This bird is spread over Europe, but appears to be confined within the boundaries of this quarter of the globe, as it has never been met with in collections from other quarters.

Marsh Harrier, *Circus rufus*, Bris.—Busard harpage, ou de marais, *Fr.*—Brandweighe, Wasserweighe, & Sumpfweiher, *G.* We do not quite like this plate, by the pencil of Mr. Lear. The bird standing upright is as stiff as a badly mounted specimen; and its companion lying down, setting the head aside, is not much like anything that claims the name of bird, save that it is clothed with feathers, which, however, are rather like large scales than feathers, and so might easily be mistaken.—"The size of this bird" observes Mr. Gould, "renders it so conspicuous, that it cannot fail to attract attention wherever it appears: it is consequently most probable that the greater number of those which are seen in our island are not native bred specimens, but have wandered from the adjacent continent; and we are confirmed in this opinion by the circumstance of most of the birds which have been shot being in the youthful or immature plumage. We know, also, that young birds are in the habit of wandering greater distances from their birth-place than adults. So great indeed are the chances against their attaining a state of mature plumage in our island, that we do not recollect a single instance of a specimen, in the plumage of the bird figured in our plate, having been killed here. That it is many years in attaining this plumage is evident, and it is equally certain that it breeds while yet in the deep chocolate coloured plumage by which it is distinguished during the first and several succeeding years."—The Moor Harrier is widely distributed, being found in the low marshy districts of Europe, Asia, and Africa. It is the *Falco æruginosus* of Linnæus, *Falco albanella con il collare*, Stor, *des. Ucc.* V. I.

Barred Warbler, *Curruca nisoria*, (*Nisoria undata*, Bonap.)—Becfin rayé, *Fr.*—Gesperbter grasmücke, *G.* The figure of this bird is very excellent.—It is a native of the northern regions of Europe, occurring abundantly in Sweden and in the north of Germany and Hungary. Mr. Gould observes, that it is with hesitation he assigns this bird to the genus *Curruca*; influenced in so doing by the consideration that, of all the then established genera among the *Sylviadæ*, it is to this that it approaches the nearest. The Prince of Musignano has recently established a new genus for its reception, under the title of *Nisoria*, of which it stands as the type. Its peculiar features consist in its lengthened elegant form and its gray tone of colouring, relieved by numerous transverse bars of black and white.

Sabine's Snipe, *Scolopax Sabini*, Vigors. This rare bird is figured in company with the

Common Snipe, *Scolopax Gallinago*, Linn.—Becassine ordinaire, *Fr.*—Heerschnepfe, *G.*—Beccacino reale, *It.* Both birds are well drawn, but the Sabine's Snipe stands on a ground out of all perspective.—Of the Common Snipe nothing need be said. The *Scolopax Sabini* is to be distinguished by the total absence of white from its plumage, or any of those tints of ferruginous yellow which extend more or less in stripes along the head and back of the Common and others of the genus. The occurrence of this bird in the British Islands is very rare. "The first example was killed in Queen's County, Ireland, in August, 1822, and was sent to Mr. Vigors the same day: it was described by him under the above title in Vol. XIV. of the *Trans. Linn. Soc.*, and is now contained in the museum of the Zoological Society. * * A second example was shot on the banks of the Medway, near Rochester, 1824. Besides these, Mr. Selby informs us that he has received a fresh specimen of this rare Snipe from Morpeth; and we ourselves know of another example killed in Ireland. * * In the number of its tail feathers, which are twelve, it differs from the *Scolopax major*, which has sixteen, and from *Scolopax gallinago*, which has fourteen. It agrees, however, in this point with *Scolopax gallinula*, which has also but twelve: but it can never be confounded with that bird, from the great disproportion between the essential characters of both; the bill alone of *Scolopax Sabini* exceeding that of the latter species by one third of its length."—Of the native regions of this Snipe and of its habits nothing is known.

The Lanner Falcon, *Falco lanarius*, Linn.—Faucon lanier, *Fr.*—Le Vrai Lanier, Buff., *Ois.* V. I, p. 243. Eastern Europe, Asia, and Africa, are the portions of the globe over which the range of this fine Falcon extends. Its visits to Western Europe, are only occasional: it has never occurred in our Islands. The Lanner occupies an intermediate place between the Peregrine Falcon and the Gyrfalcon, but approximates nearer to the former, from which, however, it differs, among other points, in never possessing the transverse markings with which the breast of the adult Peregrine is ornamented. The general tone of colouring on the upper parts is deep brown, each feather having a paler border. The under surface is yellowish white, with lanceolate dashes of brown—The figures of two birds, an adult and young, rather less than the natural size, are very characteristic.

Common Sparrow, *Pyrgita domestica*, Cuv.—Le Moineau, *Fr.*—Haus Sperling, *G.* A pair of these birds, admirably drawn, are figured in contrast with the Tree Sparrow, *Pyrgita montana*, Cuv. Grosbec friguet, *Fr.*—Der Feldsperling, *G.* This species may be distinguished from its well-known ally by being smaller in size, and in having a black patch on the ear-coverts, and a rich chestnut crown. The sexes are alike in colouring. In England the range of habitat of this species is very local, being scarcely known in some counties and common in others, as in Essex and Cambridgeshire. . It is found in central Europe, in China, and the Himalayan range of mountains.

Naumann's Thrush, *Turdus Naumanni*, Tem.—Merle Naumann, *Fr.* The figure of this beautiful Thrush is very spirited and characteristic.—This species is intermediate between the Fieldfare and the Redwing. It is a rare visitor in the eastern parts of Europe, and still more rare in the central countries. One has been killed near Munich. The true habitat of this bird is Japan and the adjacent regions of Asia. Of its habits we know nothing.

The Common Wild Duck, *Anas Boschas*—Canard ordinaire, *F.*—Gemeine-ente, *G.*—Anatra salvatica, *It.*—Canard sauvage, Buff. The plate represents a male and female Wild Duck, in full plumage. The figure of the male, in particular, is very excellent; nothing can exceed the delicacy of the pencilling; it faithfully renders all the minute zigzag lines which ornament the sides and scapularies of this beautiful bird, and the velvety texture of the feathers of the head, resplendent with glossy green. The more we examine the more we have to admire in this admirable production of the "mimic pencil."—The Wild Duck is too well known to require any special notice.

Reed Locustelle, *Locustella fluviatilis*—Becfin riverain, *Fr.*—Flussanger, *G.* The figure of this beautiful but sober-coloured bird is very attractive—it is easy and natural.—The Reed Locustelle is clearly allied to our Grasshopper Warbler, *Locustella sibilans*, in habits, manners, and notes. It is a native of Austria and Hungary, and is very common in the Island Gardens in the Danube, near Vienna. "The specific term *fluviatilis*, as applied to the present bird, conveys an erroneous impression," observes Mr. Gould, "for M. Natterer informs us, that although it resorts to low situations, it nevertheless does not confine itself to reed-beds, but rather prefers swampy copices and thickets." With deference to Mr. Gould, we submit that the term *fluviatilis* (translated *riverain* by the French) is applicable: it implies nothing respecting *reeds*; and why *Reed* Locustelle, instead of *River* Locustelle, should have been fixed upon as the English name we cannot conceive.

'Red-breasted Goose, *Anser ruficollis*, Pall.—Oie à couroux, *F.* —Die Rothals Gans, *G.* Mr. Lear is successful in the figure of this splendid bird; it is a masterly drawing.—The Red-breasted Goose is a native of the north-eastern regions of Asia, whence a few individuals occasionally wander westward and southward: four or five instances are on record of its having been taken in our island. The first instance was in 1776, near London; the bird passed into the hands of Mr. Tunstall, and is now in the museum at Newcastle-upon-Tyne. Another was captured alive, near Wycliffe, and was kept alive some years by the gentleman above-mentioned. A third was killed near Berwick-upon-Tweed, and formed part of Mr. Bullock's celebrated collection. Others, Mr. Stephen informs us, were killed in the severe winter of 1813, in Cambridgeshire.

Honey Buzzard, *Pernis apivorus*—Buse Bordrée, *Fr.*—Wespen Busard, *G.* A good and well-drawn figure.—The Honey-buzzard is far more abundant in the British Islands than is generally suspected, several instances having come to our knowledge, not only of its capture but also of its breeding in this country. Its flight is easy and graceful, and like its near ally, the *Butes vulgaris*, its great size attracts the notice of the keeper and sportsman, to whom it soon becomes a prey when it takes up its abode in our woods or parks. The range of this bird is not confined to Europe alone, as is proved by our frequently having observed it in collections from India. Insects, the larvæ of wasps and bees, lizards, and mice constitute its food. From the common Buzzard it may be at once distinguished by the small and closely-set feathers which cover the space between the bill and the eye, which space, in all the rest of the *Falconidæ* is either bare or thinly covered with fine hair or bristles.

Common Night Heron, *Nycticorax Europæus*,—Bihoreau à manteau noir, *Fr.*—Der Nacht-Rheiher, *G.*—Sgarza nitticora, *It.*—A bold and masterly drawing of an adult and young bird; it is full of life and spirit.—"No bird," says Mr. Gould, "can better show the necessity of minor subdivisions of large families than the common Night Heron. The genus *Nycticorax* is now, we believe, universally acknowledged. Seven species at least are known to us, most of which are inhabitants of remote and distant regions: one being found at Terra del Fuego, another in New South Wales, and a new one having lately been discovered in Manilla. The common Night Heron is the only species found in Europe, over the whole of which it is dispersed; as also over the whole of Asia and the northern regions of Africa; and if not identical, the Night Heron of North America bears so great resemblance to the European bird, as to require an experienced eye to detect the difference. The American birds are, however, we believe, larger in all their proportions." The Prince of Musignano has distinguished the American Night Heron under the specific title of *Nyct. Americanus*. The young birds differ from the adult not only in their colour, which is brown varied with dashes of whitish yellow and white, but also in the absence of the beautiful pendent plumes from the occiput, which form so conspicuous an ornament in the adult. In the intermediate stage it has been regarded as a distinct species, under the name of the Gardenian Heron.

Spotted Crake, *Zapornia porzana*—Crex porzana, Bechst.—Poule d'eau marouette, *Fr.*—Punktiertes rohrhuhn, *G.*—Gallinella aquatica sutro, *It.* In form, this pretty bird, of which the plate gives a good representation, is closely allied to our common Corn Crake (*Crex pratensis*). It is one of our summer visitors, arriving early and departing late. Pools, rivulets, and marshy places overgrown with reeds, are its favourite haunts, and it swims with great facility. In these points it differs from the Corn Crake, which frequents the rich meadows, threading the tall grass, which serves it as a cover, with great rapidity. The Spotted Crake is abundant in Asia and the north-eastern parts of Europe, The genus *Zapornia* was founded by Dr. Leach, for the reception of two species, *Zap.* Pusilla and *Zap.* Baillonii; and Mr. Gould refers the Spotted Crake to this genus rather than to the *Crex,* of which the Corn Crake is the type. It builds a floating nest, composed of stalks of plants rudely intertwined and attached to the stems of reeds, or placed upon a collection of them by the water's brink.

Meadow Pipit, *Anthus Pratensis,* Bechst.—Pipit Farlouse, *Fr.*—Wiesen pieper, *G.*—Le Cujelier, Buff. Pl. enl. This interesting little bird is beautifully represented. It is the Tit-Lark of the older writers, and is too well known to need any particular notice.

Black-tailed Gannet, *Sula melanura,* Temm. "We are indebted," says Mr. Gould, " to the kindness of M. Temminck for the loan of the fine specimen of this bird from which the accompanying figure was taken, and which, he informed us, was killed in Iceland. In every respect, except in having a black tail, it resembles the Solar Gannet (*Sula Bassana*), which bird, when fully adult, has a white tail. Whether this difference be an accidental variation—or, if not, whether the difference is of sufficient importance to justify a specific distinction—we are unable to decide." A much less difference, if permanent and not accidental, would go to *prove*, not to *justify*, a specific distinction. The fact is, that we know but little about the bird in question. Probably it is a distinct species from our long-established tenant of the Bass Rock; but we wait for a series of specimens. The figure is very good, and represents the bird about three-fourths of the natural size.

Jack Snipe, *Scolopax Gallinula*, Linn.—Becassine sourde, *Fr.*—Moorschnepfe, *G.*—Beccacino minore, *It.* A pair of these birds are well represented and beautifully coloured.—Like its relative, the Common Snipe, the Jack Snipe is one of our autumnal visitors, leaving us in spring for the arctic regions, where it rears its young. It is the least of the true *Scolopacidæ*, and is spread throughout the continent of Europe generally; but not much beyond its eastern limits. Among the numerous collections received by Mr. Gould from the Himalaya Mountains, he only remembers a single specimen. The individual from which the drawing was taken, Mr. Gould informs us, was taken alive by himself, from before the nose of the pointer, a proof how closely it crouches, and how much less ready it is to take wing than the common species. Indeed, it sometimes almost allows itself to be trodden upon before it will rise. In other respects its manners are those of the Common Snipe.

Black-and-White Lark, *Alauda Tartarica*, Pall.—Alouette nègre, *Fr.* Two figures are given of this species of Lark, the one in winter, the other in summer, plumage. Both are disproportionately large to the ground, and therefore give the appearance of larger birds than is really the case, the figures being of the natural size.—The *Alauda Tartarica* is a native of the high northern regions of the old continent, where it enjoys a most extensive habitat, being dispersed, as we have reason to believe, over the whole of Siberia, Northern Russia, Lapland, &c., and from whence it performs periodical migrations into more temperate climes. Like the *Plectrophanes nivalis*, and *Lapponica*, it is subject to very considerable and contrasted changes in the colouring of its plumage at opposite seasons. During the rigorous months of winter, its clothing is remarkably thick and warm; the feathers, which are then elongated, are encircled with a band of light tawny grey, and falling closely over each other, conceal the black colouring of the base of each feather. On the approach of summer, a decomposition takes place in the lighter portions of the feathers, which gradually break off, and leave the bird, in the height of summer, of a jet black, which style of dress continues until autumn when a moult takes place, and the bird again appears in its usual winter clothing. Why the term "Black-and-white Lark" should have been selected as an English name for this bird, we cannot imagine. In our observations on the Short-toed Lark (*Alauda brachydactyla*) we stated that for four species, one of which was the *Alauda Tartarica*, Boié established a genus under the title of *Melanocorypha*, which is now adopted. These species, we may again remark, are the *A. bimaculata*, *A. brachydachtyla*, *A. calandra*, and *A. Tartarica*. In habits as well as in form, they differ from the typical Larks, and constitute a well-marked group. The last species, *Melanocorypha (Alauda)* Tartarica is very rare, and seldom to be met with either in public or private museums.

While we were engaged upon the above pages, the talented and persevering author of the *Birds of Europe* took leave of England for Australia, in order to study, in their native regions, the birds of that interesting portion of the world, with the view of giving to the scientific, and to the patrons of science, a history of their habits and manners, with figures upon the same plan as those in the splendid work before us. May that success attend his enterprise which he so richly merits.

CWM BYCHAN; A LEGEND OF THE THIRTEENTH CENTURY.

NEAR the north-west boundary of Merionethshire there is situated a very remarkable and sequestered dell. This, by the natives, is called Cwm Bychan, and with it are connected many traditionary legends. It is embosomed in wild and barren mountains, amid rocks which some mighty convulsion in nature has thrown into every variety of form and aspect. On three sides it is inaccessible, and can only be approached by a narrow gorge, through which a lake discharges its redundant waters. At flood-times the cascade leaps foaming and dashing from stone to stone, whirling in numerous eddies among the broken ground bordering the ravine, down which, as it gradually widens into one of the many valleys intersecting this mountainous district, the stream pursues its tortuous course. At one time, it glides gently and silently through some deep pool, worn by time and constant erosion; then again it plunges wildy over some craggy declivity in an impetuous cataract, throwing far and high the misty spray from which the sunbeams may be seen reflected in a thousand rainbows.

The lake is drear and desolate. From their peculiarly sheltered situation, its waters are rarely ruffled by the passing winds; it lies black and sullen, imprisoned within its rock-bound chasm. The few aquatic plants which grow on its margin are stunted and sickly. It affords no abode to any of the various fish which abound in the waters of this region: it is therefore rarely resorted to by amateurs of the piscatorian art; nor is it generally frequented by roamers in search of the picturesque.

A precipice rises abruptly from the head of the lake to a height of several hundred feet, and the strata are thrown nearly in a vertical position, presenting a smooth face of stone which forms an insurmountable barrier in that direction. For a little distance on each side of the lake, the ground is level except where masses of rock, which have been detached by tempests and other causes from the over-hanging summits, lie in uncouth fragments. The cliffs, which gradually approximate until they form the narrow gorge before-mentioned, present a broken and irregular surface, and the rugged points and jutting ledges which intersect them, enable a skilful and daring mountaineer to climb the ascent which an inexperienced eye would deem impracticable.

The eagle builds her eyry, and rears her young in the hollows of these rocks: and there also the sea bird often finds a shelter from the sweeping storm. A few lichens and mosses cling to the craggy steeps, and diversify with spots of green the dark appearance of the barren heights. Near the top, where the slope is less precipitous, and where the breezes of heaven can kiss with their dewy lips the steril soil, the wild heath and shamrock bloom in their native freshness, and the sportive goat springs playfully from crag to crag, exulting in its mountain freedom. Near the entrance to the dell there may yet be seen the remains of an ancient cromlech, the sacrificial altar where were celebrated the mystical rites of the Celtic deities.

The Druids exercised all-powerful sway throughout the Cumbrian land, but they preferred the groves of embowering oak and the flowery meadows as sites for their temples. The pure morality inculcated and allegorically expressed, in the usages of this order, have been much misrepresented and perverted, through the imperfect nature of tradition and the prejudices of historians. The offering of human sacrifices, and the devoting of victims to the fire have been advanced as proofs of barbarous habits, but no authentic evidence can be brought forward on which to found such accusations, against the druidic institutions. From what can be collected of the virtue of their precepts and the wisdom of their lore, it is possible that the Druids might have been the depositaries of those brighter gems of religion which, at the ultimate dispersion of mankind, were distributed over the face of the earth, and which subsequently spread their heaven-born light through the dark ages of superstition and coloured with their softening tints even the most extravagant mythologies. The Druids worshipped Nature in the beauty of her works and the sublimity of her wonders. They taught of infinite power and intelligence, for their knowledge of causes and effects in the physical world told them that blind chance or fabled divinity, was incapable of creating and maintaining the order of the universe. In their sacred groves and sylvan temples, they saw displayed the calm loveliness of nature: in the foaming torrent and cloud-capped mountain they beheld her grandeur.

There is perhaps nothing which more expands the mind and gives it more exalted ideas of the vast immensity and sublimity of creation, than the contemplation of mountain scenery. Whether we survey the towering peaks of the Andes with their snow-clad summits, which seem to pierce the azure vault, and form mighty links between the expansive heaven and the fruitful earth: whether we survey the abrupt escarpment of the Himalaya range, down which the eye vainly seeks a resting place and the brain becomes dizzy with the dreary depths or the overhanging precipices: and whether we survey the ice-bound pinnacles of the Alps, the undulatory slopes of the Appenines, or the pine-clothed heights of the Dofra Fell—in them all we behold the same omnipotent hand which moulded into shape whatever is, and placed the mountains on the earth as seals to hold together all the various parts, to poise and balance it as swift it whirls through boundless space. Such reflections cannot fail to show to man his own insignificance and the littleness of all his works. What are the boasted Pyramids of Egypt, or the far-famed palaces of Babylon? Had the whole of them been quarried from one of our British hills, no eye could have discerned the absence of so minute a fragment; and when the hand of time shall have crumbled them to dust and mingled them with the surrounding sands, who shall trace out the once proud towers and mighty monuments?

It was during the early part of the reign of Edward the First that the incidents related in the following narrative occurred.—When that monarch returned from the Holy Land, he found himself placed in undisputed possession of the English throne. The various factions which had prevailed during the late reign, and which had deluged the kingdoms in the blood of civil war, had now subsided, all parties seemed willing to put themselves under the authority of the new king. The vigorous and restless mind of Edward, however, could not long endure the inactivity of peace. He longed for some object on which to exercise his enterprising genius and to employ the energies of his subjects. He determined on the subjugation of Wales which, for many centuries, had been a turbulent province never thoroughly conquered, taking every opportunity of throwing off its allegiance when civil dissentions or foreign expeditions had occupied the English troops.

Edward levied a considerable army and entered North Wales. The Welsh, who could not oppose him in the open field, took refuge in the inaccessible regions of Snowdonia where, for some time, they defied his power; but, at length, through famine and the perseverance of their enemies, they were dislodged and obliged to sue for peace. Heavy conditions were imposed on the vanquished by the conqueror; but these soon after were violated. The Welsh flew again to arms: another army was sent against them; they were again defeated, and Llewellyn their king was slain. His brother David became nominal sovereign of the country, but he was a fugitive and a wanderer in the land of his fathers. Hunted from place to place, with a price set on his head, this unfortunate Prince still endeavoured to maintain the liberty and independence of his native soil. Inheriting from his hardy race, indomitable courage joined to the quenchless light of patriotism, he beheld with a swelling heart and a maddening spirit the foot of the proud invader tread those wild mountain-tops and beautifully romantic vales over which he had heretofore ranged as free as the fetterless winds that play over them.

With a few faithful followers who still adhered to him in his adversity, and who still remembered their past hours of freedom and of joy, he continued to elude his enemies, and frequently made successful attacks on small bodies of their troops. Intelligence was at length brought of his retreat, and a sordid traitor proffered for a reward to betray his benefactor and his king! A strong detachment was immediately sent to secure the ill-fated monarch, under the command of Mortimer, one of Edward's generals. This officer, though a young warrior, combined with an ardent and a daring soul all the kindlier and more generous feelings that constitute the true hero. Bold and sanguine in the field, cool and temperate in the council, bland and gentle amongst his associates, he was alike feared by his enemies and beloved by his friends.

The party moved slowly and cautiously through various mountain passes, guided by the heartless betrayer, until they gained a sequestered hollow. This was deeply embosomed amid rugged crags and overhanging precipices, so begirt with inaccessible rocks that it might be deemed impregnable, but for treachery which renders vain alike all the defences of nature and the precautions of art. In this retired hold they found David with his hardy band, who, though surprised, were not dismayed at the signal of the approach of the hostile force, and each one flew to arms, resolving to sell his life as dearly as possible But it was in vain to struggle against the superior numbers which now poured upon them: one by one they fell unconquered even in death. The prince placed himself against a rock; and, like the Roman Dentatus, for some time kept his foes at bay. At his side, though somewhat sheltered by a projecting rock, stood a boy, who watched with a vivid and an intensely painful gaze every motion of the monarch's arm, and frequently apprised him of his danger. At length the youth fell severely wounded. The king turned for an instant to look on his prostrate form and thus neglected his guard. The assailants rushed upon him, seized and bound his hands, and bore him away a prisoner.

History records that this prince was tried, condemned, and ignominiously executed, for no other reason than that of having defended his native land from the usurpation of a tyrant. In the mean time the boy Thalwyn, who had shewn some indications of returning life, was carried by the humane directions of Mortimer to his own tent. The young commander himself frequently watched the sick-bed side, and ministered to the various wants of his charge.

Some time elapsed before the youth exhibited any symptoms of recovery. The anguish of his mind aggravated the pain of his wound, and materially retarded his convalescence. Mortimer tried by every art to sooth and divert his grief, sometimes cheering him with the hopes of renewed health, and sometimes beguiling the tedious hours of his suffering with anecdotes of life and adventure. At first he received all the care and attention that was bestowed upon him with silence and seeming indifference. After the poignancy of his sorrows, however, had been blunted by time, the boy acknowledged the kindness, and a grateful look, a slight pressure of the hand, and a few low words of thanks would occasionally escape from him.

At length Thalwyn recovered his former health and vigour; and the first day on which he ventured from the tent to survey the beautiful face of nature, he found himself standing in the midst of the picturesque vale of Ffestiniog: he beheld the wood-clad rocks with their luxuriant foliage. He turned to the river meandering like a vein of silver through the more cultivated parts of the vale: he strained his gaze to the distant ocean, now calmly sleeping in the embrace of the azure sky. The contemplation of such a scene awoke in his soul all its past associations. He thought on the days of his childhood and the home of his fathers, on his lost country and departed friends; and then in the bitterness of utter bereavement, he burst into a flood of tears. Mortimer regarded him with pity and deep interest; for the knowledge of his misfortunes and the gentleness of his manners had won the regard of the English general, who had witnessed the boy's bravery at the capture of his king. There was something, also, in the young Cambrian's demeanour, an innate nobility of bearing, which alike commanded sympathy and respect.

Thalwyn had the appearance of being about sixteen years of age. He was tall and graceful. His form, though slight and delicate, was beautifully symmetrical. There was an air of pensive melancholy and subdued sadness about his general behaviour, as if he bore his fate with placid resignation; but the occasional flashes that gleamed from his expressive eye betrayed the inward workings of an unsubdued spirit. His fair hair clustered in profuse curls over an open and intelligent brow, on which might be traced already the lines of suffering and of sorrow.

Mortimer approached and spoke to the impassioned youth in the soothing words of kindness. "Come, my brave boy," said he, "cheer up! you shall have nothing to fear: I will be your friend, you shall be to me as a brother." The youth took his hand and pressed it to his lips; and, still keeping his eyes on the landscape, he said, "I pray Heaven bless and reward you, noble and generous foe! I owe you much, infinitely more, than I can ever repay; but suffer my weakness now, for my heart is sick, my soul is oppressed, the remembrance of the past is upon me!" Then, as if addressing the surrounding objects, he thus continued:—"Farewell to the playmates of my early youth; to the smiling faces of my kindred and friends! Farewell to the joyous song of the shepherd on the hills, and the swelling strains of the harp in the banquet hall! Farewell to my country's freedom! Cambria, thou art fallen! Thy glory has departed! Thou, who hast stood against the powers of tyrants and maintained thy liberty for a thousand ages, thou hast no longer a name! Where are my fathers; and where the warriors whose blood was spilled on thy once happy soil! Where are the mighty men, the memory of whose deeds shall live in Fame's bright annals! And where is the line of kings who proudly swayed thy sceptre! Gone! gone! for ever gone! But still I hear their voices in the waving boughs and rippling streamlets! They speak in the mountain winds and in the roaring cataracts! Yes! I hear the full chorus of their spirits as they ride on the sweeping clouds that flit across yon blue expanse! I hear the pealing shout, the unconquered Briton's cry, We are free! We are free!"

During this apostrophe, Thalwyn had raised his face to Heaven, and his beautiful countenance, lighted by the fires of poetry and patriotism, appeared radiant with an expression more than earthly. Mortimer gazed upon him with wonder, not unmixed with awe. That one so young, and apparently so meek, should be enabled to think and speak with the force and energy of mature years, seemed to him both extraordinary and unaccountable. In these times, superstition fully sanctioned a belief in the agency of supernatural powers and in the gift of inspiration. The Cambrian youth, brought up from their infancy to disdain slavery and oppression, and to glory in freedom and independence, imbibed from their bards and sages the most enthusiastic sentiments. No wonder, then, that this boy who had enjoyed peculiar advantages of education should have a mind so much beyond his years both in feeling and imagination.

Time rolled on; weeks and months passed away. Order began to be established and government maintained in the conquered provinces. At first the yoke pressed hard upon the vanquished; they felt all the misery of slavery, save the bonds; and their proud spirits were galled under the restraint which was laid upon them: but by degrees they submitted to the victor and yielded a passive obedience to the rule against which they found it vain to struggle. There were still, however, a few desperate men who, driven to the rocky fastnesses, associated themselves together in small bands, and committed petty depredations on the surrounding district: but these were not deemed of such consequence as to require a military force to be sent against them.

Mortimer had remained on the station in the valley of Ffestiniog during this period; but he had now only a small body of troops with him; and was in daily expectation of being recalled. Thalwyn had become his page and was his constant companion. He was much attached to the youth, partly from a knowledge of his misfortunes, and partly from his peculiarly engaging manners, his well-informed mind, and the loftiness of his sentiments. Every spot of his native mountains was familiar to him, and he would frequently be Mortimer's guide through their wild scenery. When engaged on these expeditions, the gloom which generally hung over him was dispelled, and the free air of the hills seemed to give elasticity to the mind as well as vigour to the body.

Often when standing on some jutting rock or craggy pinnacle to survey the lovely landscape which lay outspread beneath them, he would forget his present condition and the woes of his country, and with warm enthusiasm, with animated gesture and a beaming eye, he would relate the traditions and legends of his father-land.

When interrogated regarding his parents and kindred, he was reserved and silent. The subject seemed to awaken the most painful sensations, and on this account it was seldom mentioned.

At length the expected order arrived. Mortimer was to repair instantly to Normandy, at the head of a considerable army, for the purpose of quelling the rebellious vassals in that kingdom. As this service was sure to be attended with much hazard and danger, he proposed to his page that he should remain in England under the care of a trusty friend. Thalwyn heard the proposition with a downcast look and a tearful eye; but, after a moment's consideration, with a brightening countenance, he replied:—"No! this must not be. I must accompany you. You are my only friend, my only guardian. I will share your fate, be it what it may! Think not that the chance of peril will blanch my cheek, or the approach of danger make my heart quail. Have I not lived amidst hardships and deprivation, strife and bloodshed? Cradled in the mists of the cloud-capped mountains and nursed in the ruthless blast of the sweeping tempests, I dread not the power of the elements! Then, I have seen war and the direst devastation, with all the aggravated enormities of fiendish cruelty. I have seen the bold and the freeborn struggling against the oppression of the proud and ambitious. I have seen the brave, the generous, the noble, despoiled of their home and their heritage, severed from their fondest affections, degraded, persecuted, trampled on, outcasts and wanderers. I have seen all that I loved on earth fall murdered around me; yet I trembled not in that fearful hour: I thought but of blood and of vengeance; but *that* thought has passed away. I feel that I could undergo pain and bonds and torture, nay, death itself, if love or gratitude required such a sacrifice. Then let me attend you: let me share your weal and woe. It may be that the poor and humble page may have some opportunity of rendering service to his lord and benefactor!" Mortimer could not resist this appeal. He determined that Thalwyn should accompany him, and the necessary arrangements were made.

It was now the evening before their departure. Mortimer retired at a late hour to his tent. His mind was intent upon the past, the present, and the future; he in vain courted the requisite repose; and while restless and ruminating his attention was attracted by the merriment of a party of his soldiers who had warred in the East, and who were now recounting to each other the wonders of Palestine, and singing the triumphs of the Cross over the Crescent, in the

SONG OF THE CRUSADERS.

Away to the battle field we go,
Where glory awaits us and death to the foe;
Our lances gleam o'er the plain as we dash,
And our shields in the sunbeams brightly flash.

Our souls as the chainless winds are free,
And our hearts are united in chivalry;
Our coursers are swift as the eagle's flight,
And we scorn the boast of the Moslem might.

Hark! 'tis the cymbals that ring afar;
Hark! 'tis the pagan trumpet of war.
On, on, let the infidel quickly feel
The power and weight of the Christian's steel.

We meet in the fearful shock,
The spears shiver!
The swords quiver!
They fly as the scattered flock!

The paynim host is lost,
Their champions quail,
Their cimetars fail,
Before the sword that's cross'd.

Our blades are wet with gore,
The crescent flies,
The Moslem dies,
The sanguine strife is o'er!

Then away from the battle field we ride,
And our banners float on the azure tide,
As, with heart and voice, we raise on high
The shout of triumphant victory.

Mortimer rose and looked out of the tent: all was still, save the tread of the sentinel walking to and fro without the camp as he gave the quick responsive "All's well" to the challenge of the watch.

Masses of dark clouds swept rapidly across the sky, obscuring for a time the light of the moon, which ever and anon shone forth in calm, majestic loveliness over the scene, silvering each woody slope and dew-fringed leaf. There was not a breath of air stirring in the valley; but the floating rack and the distant murmurs from the hills, shewed that the breeze was dancing merrily over the mountain tops. All was hushed: the soldiers, as they lay around, some under the slight covering of a tent, and some under the canopy of heaven, were folded in the calm deep sleep of conscious security and peace.

After surveying the scene for some time, and refreshing his feverish brow with the cooling air of night, he again threw himself on his couch, and was soon lost to the sense of all external objects and impressions: but his rest was doomed fearfully to be broken. Soon fell on his ear the well-known cry of To arms, To arms. The enemy are upon us! Defend yourselves! He started instantly to his feet, snatched his sword, and rushed out of the tent. The moon, which had just emerged from a dense cloud, and now shone clear and bright, shewed him a number of wild savage figures, half naked or clothed in rough skins, armed with long knives, axes, and heavy clubs, which they brandished with frightful outcries. This desperate band had surrounded the camp and were now commencing the work of slaughter. The inhuman yells of the Welsh, as they darted on their victims, and the deep imprecations of the English as they sank beneath the weapons of their merciless foes, produced the most appalling discords.

The surprise was complete. Mortimer in vain endeavoured to rouse the courage of his troops, and to rally them to resistance; but they seemed paralysed with the suddenness of the attack, and thus were butchered by their ferocious assailants. At length, collecting a few who had recovered their presence of mind, he called on them to follow him. Wherever he turned the enemy shrank before him, but his valour was unavailing. One by one his followers met their fate; and he now stood alone amongst his foes, who, with a fierce shout, proclaimed their triumph, and quickly surrounded the chivalrous Mortimer. Thus hemmed in, he continued to defend himself with the most obstinate bravery. His sword was raised for a deadly stroke, when he received a blow which felled him senseless amidst his dying and dead comrades.

The morning broke, clear and bright, on the town of Caernarvon. The sun, as he glanced o'er the eastern hills forming the black range of Snowdonia, shed his golden beams on the towers of the majestic castle, throwing their shadows far across the bay. Eleonora, the consort of King Edward I., had been some time resident at Caernarvon, where she had lately given birth to a son, afterwards Edward the II., as imbecile a monarch as ever swayed the English sceptre. But it was not in the tapestried chamber, with the carpeted saloons, and all the luxury of modern taste and extravagance, that the queen brought forth the young prince; but, as tradition says, "this event took place in a small room not more than ten feet square, situated in the eagle tower, which room possessed the unusual comforts of a window and fire-place." But to return to the morning in question: at an early hour, a most unusual bustle prevailed in the town, and in the roads leading to it. All the barons and chief men in the country were assembled together, and groups of peasantry continued to pour in from the surrounding districts. Wonder and expectation were displayed in every countenance. They all collected in a square in front of the castle, which reared high its massive portal with its four portcullises and embattled parapets. The troops, to the amount of some thousands, were drawn out on a rising ground which commanded the town, under pretence of doing more honour to the approaching ceremony, but in truth to guard against any outbreaking of public feeling. The King at length appeared on the battlements, and every voice was hushed. His tall majestic figure and his commanding countenance at once pointed him out, and impressed upon the beholders a feeling of fear and admiration. He spoke to the people at some length on the evils of discontent and rebellion, and on the advantages of peace and union to the two kingdoms. He then proceeded: I have promised to give you a prince born in your own land, nurtured under your own skies, one who has breathed nought but your own free mountain air, one who knows not the language of the Saxon, whose foot has never trod English ground, whose life and conduct are without reproach; who, as a countryman, will protect your property and defend your rights. I am now about to redeem my pledge." Then, turning to an attendant, he took in his arms an infant and presented him to the people, saying "Behold your prince! a true-born Cambrian! See! he smiles upon you and asks you for your friendship and support! You cannot refuse to give them."

All were taken by surprise. They gazed on the monarch and on his son in silent astonishment during his address. The most trivial circumstances very frequently determine the bias of public opinion. In this case, the child's smile did more than all the eloquence of the father. After a short pause, there burst forth one simultaneous shout of "Long live the Prince of Wales."

When the exhibition had ceased and the assembly began to disperse, a horseman was seen making his way with difficulty through the crowd. His steed was jaded, and the rider looked pale and haggard. He forced his way up to the gates of the castle, and solicited an audience of the King on a matter of life and death. Edward, who heard what passed, ordered him to be admitted. The portcullis rose accordingly, and the next moment the messenger found himself within the court of this place of strength. He was quickly ushered into a chamber, at the upper end of which the king waited to receive him. The young man approached and made obeisance. "What is your name and business?" demanded the monarch, "methinks it must be something urgent and extraordinary to need our personal attendance at a time like the present. Speak." "I am called Thalwyn," replied the youth boldly, "my intelligence will speak for itself. I am the page of your Highness' faithful servant Mortimer. He was last night surprised by a band of mountaineers, his detachment was cut to pieces, and himself carried away a prisoner." Thalwyn then recapitulated the details of the attack of Ffestiniog, and stated farther, that while assisting Mortimer to defend himself, he was struck down by one of the assailants, and remained insensible for some time; and when he recovered consciousness, the enemy were just retiring, after having plundered the camp of every thing valuable. He succeeded in ascertaining, by their conversation, that Mortimer was not dead, but a prisoner; and that they intended to bear him with them to the mountain glen called Cwm Bychan, and there to sacrifice him to their ruthless revenge.

The King heard the narration with increasing interest, and when it was concluded, exclaimed: "These are indeed strange tidings, and they claim our especial interference. I would rather lose half the Principality, than that evil should befal my brave general. He must be rescued. Let a strong body of horse be instantly despatched on this service. Let them utterly exterminate this horde of savages. Let them approach the rocky fastness by some circuitous route, and see that none of the miscreants escape. Whoever will faithfully guide the party to the required spot, shall have a purse of gold and a king's favour for a reward."

Thalwyn now spoke. "I ask not for favour and reward, neither would I receive any; yet I will direct them. Every mountain-path I know well. Every ravine and precipice is familiar to me. I could tread over the wildest tracks fearlessly, through the darkness and through the tempest." "Stay," interrupted Edward, speaking to one of his attendants, who was about to depart for the purpose of seeing his orders executed, "there may be more in this story than meets the ear; and it behoves us well to be cautious in receiving such a report." Then, fixing his penetrating eyes upon the youth, he thus interrogated him—"Methinks, by the manner of thy speech, thou art not of Saxon lineage." Thalwyn shrank not beneath his glance, but met it with its equal, and replied: "I am of nobler blood than ever throbbed in Saxon veins!" "By that proud boast," said the king, "I deem thou art one of these rebellious Welsh." "I am, in truth," returned the page, "a child of that oppressed and injured people." "And," said Edward, "would, no doubt, gladly repay some of those injuries by betraying our brave followers to the knives of your savage countrymen. Away with him! Let him be closely watched. We will soon ascertain the truth of his tale."

Thalwyn's eyes flashed fire during this accusation; and at its conclusion, stepping boldly up to the king, he thus addressed him:—"Know, proud prince, that not for all thy broad lands and fawning vassals; not for all thy boasted fame and bright renown; not for all the pomp and power that wealth can give; nor yet to free my country from the hated yoke that now rests upon it: no, not for all these together, would I be guilty of a treacherous deed. To deceive and betray more befit a base Norman robber than a free-born Briton!" A frown gathered on the king's brow; and the page, as if suddenly recollecting the necessity of subduing his own feelings on the present occasion, changed the tone of high defiance which he had assumed to one of supplicating entreaty. Falling on his knees before Edward, he thus continued:—"Oh! if you have ever felt the tie of gratitude; if you have ever felt the bond of love; if you have ever been restrained from assisting the friend who was most dear to you, when perils and dangers surrounded him, and your hand might have saved him; you cannot refuse me your sympathy, your assistance. Mortimer once rescued me from a cruel death; he has since been my friend, my benefactor, my more than brother. I could now willingly sacrifice my life, if it would secure his freedom. You may imprison me, you may torture me; but I swear that all I have said is true. I entreat you, by your duty as the king and father of your people; I conjure you, by your plighted faith as a true and noble knight; I implore you, by your feelings as a man, to listen to my request, and send instant relief to the gallant Mortimer. Oh! I beseech you, lose not a moment: it may be now too late? He may have fallen a victim to the revenge of his enemies. Oh! if you do not believe my story, let me go: I can at least die with him!" The flushed cheek, the dilated eye, the parted lip, the agitated frame, all showed how intense was his interest in this appeal. Edward was much moved, and after regarding Thalwyn for some time, as the youth knelt with uplifted hand, awaiting his fate, he said:—"Thy countenance is too open to harbour treachery, thy tongue is too bold to utter a falsehood: I will trust thee. Up and away, then! Take five hundred of my bravest veterans. Be faithful, and God speed your undertaking."

In the meantime, the unfortunate Mortimer, wounded and unconscious, was borne away between two of the band, while the whole party made such speed as the nature of the ground would allow, in order to regain by daybreak their secret hiding-place. They had to cross that mountainous district which lies between the counties of Caernarvon and Merioneth, and which presents, perhaps, one of the wildest and most inaccessible tracts in this region. It was through this scene of barren desolation that the mountaineers took their way. The two men who carried the prisoner were more than once resolved on leaving him to perish on the mountain, as they found a difficulty in keeping up with their companions, owing to the necessity of taking a more circuitous route with their burden. They arrived at length at the entrance of a narrow gorge which formed the bed of a torrent, though at that time the water scarcely trickled down its rocky course. They paused, while one of the party went forward to reconnoitre, and he soon made a signal for the rest to advance. They ascended with some difficulty the broken and slippery paths, until they came to the lake described in the early part of this narrative, as embosomed in a hollow of the mountains. Here they were greeted with a cordial though brief welcome by a few of the band who had been left, as it seemed, to guard the fastness, and who regarded Mortimer with the greatest surprise and evident satisfaction. He was now perfectly sensible of all that was passing around, and fully aware of the utter hopelessness of his situation. Though he did not understand their conversation, yet from their fierce gestures, and the savage looks with which they glared upon him, he felt that he was a doomed victim, and that to plead for mercy would be vain, and only expose him to the taunts and derision of his captors. Nevertheless his courage did not fail him; he stood erect, and looked around with an air of haughty defiance. One who seemed a chief now spoke, and told Mortimer that he must prepare to die; but that, as they desired all their companions to witness his death, and as some of them must be summoned from a distance, the execution would be deferred until night, "when," concluded the speaker, "every drop of thy blood shall answer for the life of a brave Briton!" He was then placed in one of the caverns with which the surrounding cliffs abounded; and, after being strongly secured, he was left alone.

Mortimer had ample time, during the weary day which followed, to think on the horrid fate that awaited him; to mourn over his slaughtered comrades; to lament the loss of his faithful page, whom he had seen lying with the dead. Naturally brave and fearless, he could have met any danger in the open field; he could have boldly faced death with his sweeping scythe of war; but thus to be massacred in cold blood, without the excitement of strife or battle, unseen and unregreted, was too much for his stoicism. He shuddered when he contemplated the prospect. Nevertheless he determined to nerve his mind to endure the worst, and to die as became a man and a warrior.

The shadows of evening had begun to darken over Cwm Bychan. The atmosphere was unusually close and oppressive; not a breath of air waved the dark waters, or moved through the rock-rent ravine. Yet larger masses of clouds, which hung suspended over the tops of the hills, seemed drawn together by some potent but unseen influence. All was silence, all was gloom: the general appearance of the heavens portended one of those storms which so frequently prevail in mountainous districts; but, at present, Nature seemed resting on a balance, which held in either hand the warring elements.

Several small parties of Welsh had arrived during the day; and now, the whole of the band being assembled, it was determined to bring out the prisoner for execution. A large stone was prepared, on which the fore-doomed victim was to be bound; and as all were desirous of bearing a part in the work of vengeance, every hand could inflict a wound. The young soldier, completely wearied by the fatigue and anguish he had undergone, had forgotten his situation and danger in the oblivion of sleep. He was carried in imagination back to his early days, and was busy amid the scenes of his childhood and the hours of his infant pleasures, when a rude hand made him start, and the voice of the chief who had before spoken fell fearfully on his ear—"Up, up! The time is come that thou must die!" Mortimer quickly collected himself. He rose and followed the speaker. When he came out on the level space bordering the lake, the scene which presented itself was enough to appal the stoutest heart. He found himself in the midst of several hundred of the wildest and most ferocious-looking figures, some bearing torches, and all armed with long knives, which they brandished in a menacing manner when he approached. He looked up to the heavens. One deep impenetrable pall of blackness overspread the landscape. The tempest had gathered above them, and only seemed to wait a signal to discharge its fury upon their devoted heads. Not a sound was heard, save the crackling of the burning torches and the quick-drawn breath of the relentless barbarians. Mortimer was bound to the huge stone, and the first hand was raised to strike, when a bright flash disparted the vaulted sky, flooded each rock and crag with a blaze of lurid light, palsied every hand, and made every heart quail. The next instant the thunder-clap burst in all its terrific magnificence, shaking the solid ground, and rending the sultry air. From hill to hill, from valley to valley, far and wide, the shock was reverberated. The eagle fled shrieking from his shelter in the cliffs, and the wild goat uttered his sharp cry, as he started from his heathy lair. Another and another flash came in quick succession. Large drops of rain began to fall, and the storm burst with resistless violence. Accustomed as the mountaineers were to behold such convulsions of the elements, they were now dismayed and terrified. After pausing a moment to gaze on each other, they fled and sought refuge in their caves. Mortimer was exposed to the whole fury of the tempest. The rain descended in torrents, but he was incapable of moving. The crags around him were shivered by the lightening's stroke, and an immense fragment, riven from its rocky bed, rolled crashing at his feet. The fires played over him; the waters drenched him: yet he was unhurt. He invoked death; he called on the elements to crush him: yet he was unscathed.

By degrees the violence of the storm subsided. The lightening was less vivid and less frequent. The thunder was subdued into distant murmurs. The rain ceased to fall, the sky became clear, the moon and stars shone forth in renewed brightness. In a short time there was nothing to tell that the quiet order of nature had been disturbed, save the rushing of the waterfall, which foamed impetuously down its rugged channel. The sentinel on the lofty eminence of Carreg y Saeth had, like his comrades, sought shelter from the tempest; but now that it was past he resumed his post, and the rest of the party, emerging from their retreats, proceeded to finish the work of sacrifice.

They again approached their victim, and were about to sheath their weapons in his breast, when a shrill cry from the sentinel arrested the deed of blood, and the next instant beheld him hurled from the precipice headlong into the deep waters below. A hundred lances gleamed on the heights above; the gorge was filled with armed men: escape was impossible. The late storm had favoured the approach of the English soldiers, who, under the guidance of Thalwyn, had toiled ceaselessly to rescue their general from destruction. With a simultaneous shout, "To the rescue! to the rescue! no quarter to the miscreants!" they commenced the attack. Those on the heights threw down stones and missiles, while others forced their way up the paths, and fought hand to hand with the outlaws. Thalwyn was the first to reach the place where Mortimer was bound; he severed his fetters and placed a sword in his hand, which the warrior was not slow in turning to good effect. The struggle was brief, but bloody. The Welsh were cut off to a man, and the English troops soon found themselves in undisputed possession of the glen.

But where was the brave boy who had conducted them through the dangerous and untrodden paths, the page to whose fidelity and courage Mortimer owed his happy deliverance? He was sought for in vain among the living, and was at length found lying stretched on the ground, wounded and senseless. Mortimer hung over him, and watched him with the tenderest solicitude; but it was long ere he recovered consciousness. When he first opened his eyes, and saw who was near him, a faint smile played over his pallid countenance; and when he had regained a little strength he called Mortimer to him, took his hand, and thus addressed him:—

"I am dying. I would say a few words before the cold finger of death is laid for ever upon my lips. I am not what I seem to be: but it is time to away with all disguise. I am Vinvena! Nay, start not; but hear me. You see before you the unfortunate daughter of a line of kings: the last of a noble house. I followed the fortunes of my father through perils and persecutions. When your soldiers took him prisoner, I hoped never to have survived the disgrace. *You* rescued me. At first my only thoughts were of vengeance. Your kindness by degrees won upon me: I admired your noble and generous character, and (why should I hesitate to own it?) I loved you! Yes, I loved you with all the devotion of a woman's love! I knew that I could never be ought to you, and yet I loved you! You were father, kindred, country, fortune, fame, every thing to me. I abandoned every wish, save that of serving you. That wish has been gratified. I guided the timely succour. Thank heaven, you are safe; and *I* have saved you!—And now, welcome, death! welcome, oblivion of the past! Soon shall I be united to those who were dearest to my soul! Yes, I hear the spirits of my fathers calling upon me to join them in those realms where there shall be no more wars, or sorrow, or death. Farewell, this earth! Vinvena, thou art free!"

M. E. M.

PROCEEDINGS OF METROPOLITAN SOCIETIES.

GEOLOGICAL SOCIETY.

April 4th.—A very elaborate paper on the structure of a new *Plesiosaurus* was read by Professor Owen; in the course of which a profound dissertation relative to the position of a vertebra, suggested by certain peculiarities noticeable in those of that extinct genus, was introduced, and illustrated by a variety of diagrams. This masterly treatise elicited the liveliest approbation, and its leading points were eloquently descanted on by Dr. Buckland, who congratulated the Society and science in general, on the auspicious circumstance of the noble Hunterian Museum of Comparative Anatomy being entrusted to the care of one so competent to appreciate and avail himself of the treasures therein deposited, and from whose youth, conjoined with his very high attainments, there was every reason to anticipate a long succession of equally valuable memoirs, such as do honour even to the nation which produced their author. A discussion followed, which had been postponed from the previous meeting, relative to a remarkable disruption of the tails of the *Ichthyosauri*, always at a particular vertebra; from which it had been argued, by Professor Owen, that not improbably a fin, analogous to that of many *Cetacea*, had existed in the recent animal; for it was remarked that no indication of such an appendage was visible in the osteological structure of the *Cetacea*, whence, had we been acquainted only with the skeletons of those animals, as in the instance of the *Ichthyosauri*, the former presence of so highly important a locomotive organ would certainly never have been suspected. He was led to surmise, therefore, in order to account for this constant disrupture of the caudal vertebræ of these animals always at one place, and from the appearance which the discontinuation presented, that a weighty appendage must have broken down the vertebral column, when, the dead animal having floated on the surface until decomposition had loosened the attachments of its bones, and its investments having been sufficiently coherent to have confined the gases disengaged by putrefaction for the required period, it at length sunk on the bursting of the skin; and an argument was accordingly deduced from this presumed circumstance, for the tranquillity of the waters at the time this gradual process was going on. Sir Philip Grey Egerton, Bart., Dr. Buckland, the Rev. W. Conybeare, Professor Phillips, and Mr. Darwin, argued the possibility of this explanation, and concurred, for the most part, in the view entertained by Professor Owen.

April 25th.—Three communications of a descriptive nature were read: the first, from Mr. Bowman, on the geognosy of the neighbourhood of Abergavenny; the second, from Mr. Malcolmson, upon the structure of part of the county of Elgin, announcing that the Wealden rocks are considerably developed in the north of Scotland, deviating, in some instances, mineralogically, but enclosing numerous fossils, identical with those found at Swanwich; the third, by Mr. Austin, related to the limestones of Devonshire, for the manner of formation of which a novel theory was proposed, suggesting that they had been originally deposited in their present inclining order of stratification, upon a conformably shelving surface. Mr. Murchison then stepped forward, to comment on what he termed some valuable practical details that had been laid before the meeting: details in which he felt particular interest, as tending to elucidate the geological history of this country, respecting which they contained important information. It was with pleasure that he bore testimony to the penetration of his friend Mr. Lyell, who long previously had entertained a suspicion that the chalk had formerly extended over a considerable portion of the north-west of Scotland; for, although this actual stratum had not yet been traced, still the approximation to it afforded by the successive discovery of the immediately subjacent beds, combined with the fact that flints containing chalk fossils occurred abundantly on the summits of many hills, distinctly indicated the denudation that had taken place, some traces of which had also been remarked in Scandinavia. In the conversation which followed, several remarkable identifications of Elgin *Ichthyolites* by M. Agassiz, who, unaware of the locality whence they were obtained, had assigned them expressly to particular strata of the south of England, were read from a letter received by Mr. Murchison from Mr. Malcolmson, penned subsequently to the communication of his paper which had been brought forward that evening.

MAY 9th.—The business of this meeting commenced with the description of a fine vegetable fossil, a species of *Sternbergia*, particularly interesting as being parasitically attached to what was adjudged to be a portion of the stem of a Tree-fern. After this, a communication was read from Mr. Williamson, of Scarborough, being a continuation, or resumed description, of the geology of the adjacent part of Yorkshire. Next, a long and very interesting paper, by Mr. Smee, engaged attention for the remainder of the evening, upon the changes which animal matter undergoes in the process of becoming fossilized. In this it was clearly shown, from a variety of direct observations made upon human bones that had been inhumed for a longer or shorter period, and of which the most ancient had been obtained when digging for the foundations of the cathedral of Old Sarum, together with those of different animals, of various degrees of geological antiquity and of petrifaction, also from carefully conducted experiments upon shells and other animal exuviæ, that the carbonization of the animal (as distinguished from the earthy) matter which they contain, is superinduced during putrefaction, and accordingly affords no datum for determining the relative age of fossils. After the conversation which ensued, Sir Phillip Grey Egerton drew attention to some casts of portions of the cranium of *Mastodon longirostris* which he had laid on the table, and which he suspected to be of the same species as the *Mastodon* of which teeth had been obtained in the English crag, hitherto referred to *M. angustidens*, which latter, he had reason to believe, had never been met with out of India. Mr. Charlesworth bore testimony to the general similarity of the dentition of *M. longirostris* to English specimens of Mastodon teeth in his possession, but pointed out a slight discrepancy in one respect, and preferred to suspend his judgment for the present, as so little was yet known respecting the crag animal.

MAY 23rd.—Professor Sedgwick read the concluding portion of a very elaborate paper, entitled "A Synopsis of the Series of English Sandstone Rocks anterior to the Old Red Sandstone, and more particularly as developed in the counties of Devonshire and Cornwall." He drew especial attention to the astonishing thickness of the beds, and to the abundant existence of fossils, and of impressions of organic remains, in certain metamorphic rocks of those counties, affirming that the central granite is clearly of less high antiquity than several of the superincumbent fossiliferous deposits. In the very animated and interesting discussion which followed, Mr. Greenough, Mr. Murchison, Professor Phillips, Mr. Lyell, Mr. Stokes, and others, bore prominent parts; and the eloquent and energetic final reply of the eminent Cambridge professor, in reference to various remarks and some allegations that his treatise was in great part devoid of novelty, elicited the most flattering applause and admiration, and rivetted the attention of the meeting to a late hour. Professor Sedgwick descanted at considerable length on the successive discoveries which have been made in British Geology since the publication of Mr. Greenough's excellent map, which he warmly eulogized; and defended the claims of the contribution he had just brought forward to contain much that was quite new to science, although it professed chiefly to be a digest of our previous knowledge on the subject upon which it treated.

JUNE 6th.—A paper by the Marquis of Northampton was first read, in which were described several new species of minute multilocular spiral shells, which his lordship had obtained in one or two localities from the chalk and its flints. Next a communication from J. Taylor, Esq., was brought before the meeting, relative to the quicksilver mines in Mexico, which were stated to be extremely rich, much of the ore yielding forty per cent of metal. At present, however, they were worked to great disadvantage, and not more than half that quantity was extracted from the finest ore. Some native calomel had been found in certain districts. A paper on the formation of obsidian, or mineral glass, contributed by Mr. Edmonds, an officer of the Real del Monte Mining Company, was the next in order: it stated that many layers of this substance, alternating with trachytic sandstone, had been observed, with evident indications of its having been produced by the partial fusion of the latter. A notice was then read, from Mr. Murchison, of certain rocks in the British Channel, called the Culm Rocks, situate not far from Little Hampton. They consisted of a hard grey calcareous grit, resembling the Bognor Rock, and were deemed to be of the tertiary æra. Dr. Buckland then exhibited some specimens of fossil fishes from the Bagshot Sand, discovered in excavating the Southampton line of railroad. Among them were teeth of Sharks, Rays, and Saw-fishes, and three new genera of bony fishes, which he characterized. These fossils confirmed the opinion that had been previously entertained, of the Bagshot Sand being referrible to the œocene period. Dr. Buckland also exhibited a siliceous fragment of the sacrum of a bird of the size of a Goose, which had been obtained from the Stonesfield Slate. Lastly, an elaborate paper was read by Mr. Stokes, containing descriptions of *Orthoceratites*, chiefly from the neighbourhood of Lake Huron, and some localities in Arctic America, whence they had been brought by the officers of the different arctic expeditions. A long conversation followed, which was sustained till a late hour, in the course of which Mr. Sowerby made several important statements, announcing some curious variations of structure and position in the syphuncles of different chambered shells.

ORNITHOLOGICAL SOCIETY.

May 5th.—The Report of the Council stated that the Commissioners of Her Majesty's Woods and Forests had caused some ponds and shallows to be made in the larger island in St. James's Park, in compliance with a request to that effect made to them by the Council of the Society. It further announced that the Duke of Buccleugh had been proposed for election as President, in the room of the Earl of Liverpool, whose term expired on the 18th. W. Holl, Esq., had also been proposed as Secretary, and F. B. Long, Esq., as Treasurer. The following noblemen and gentlemen were mentioned as to retire from the Council: viz., His Grace the Duke of Bedford, W. G. Chapman, Esq., the Earl of Liverpool, Capt. Mangles, R.N., and Sir J. D. Paul, Bart.; and the following were named for election in their stead: viz., His Grace the Duke of Buccleugh, Hon. P. C. Scarlett, M.P., F. B. Long, Esq., E. Jesse, Esq., and O. Morgan, Esq.

Mr. Blyth then exhibited specimens of the three wild British Geese allied to the domestic breed, namely, the Grey Goose *(Anser cinereus)*, the Bean Goose *(A. segetum)*, and the White-fronted Goose *(A. albifrons)*, all which were promiscuously sold in the markets under the general name of "Wild Goose." The first of them was stated to be the primitive stock of the domestic Goose, and to have become of extremely rare occurrence in the British islands, although it formerly bred plentifully in the fens. Until very recently, no specimen of it existed, that he could learn of, in any of the London museums; but aged examples of the Bean Goose, that had the terminal nail *(dertrum)* of the bill white, were ticketed with its name. It differed, however, in various particulars, which were pointed out, and might always be at once told by the pale grey colour of the rump, which in both the others is very dark brown. The Bean Goose was mentioned as the ordinary Wild Goose of these islands, which it annually visits in large flocks, frequenting upland pastures, where neither of the others are ever seen. It was the only species of the three brought to market during the continued severe weather of last winter, when thousands of them were daily exposed for sale. In ordinary winters, the White-fronted Goose is the most frequent species in the markets. Though the Bean Goose had never previously been known to breed when domesticated, it was stated that two females were then incubating on one of the islands of St. James's Park, a fact the more interesting as they enjoyed the full use of their wings. A paper on the Natural History of the Nightingale was next read, after which the meeting adjourned.

MAY 18th.—The Anniversary Meeting took place on this day. The Report of the Council commenced by congratulating the members on the position which the Society had already attained. The number of subscribing members was stated to be 205; a number probably unprecedented in the first year of any other scientific society. It proceeded to remark that it would be in the recollection of many, and more especially of the original members of the Society, that during the commencement of its operations in St. James's Park, great injury was occasioned by the mischief and cruelty of the children and other frequenters of the Park; but the Council had the satisfaction of reporting that a marked improvement in this respect might be observed: and they are convinced that the gratuitous exhibition of living birds will have a powerful effect in combating the childish propensity to teaze and torture animals, and in substituting an intelligent interest in the place of an ignorant and brutal cruelty.

Little more than a nucleus of the museum and library had as yet been formed; but the Council are confident that, with the valuable scientific services of the Curator, Mr. Blyth, a sufficiency of specimens to illustrate the monthly lectures would shortly be obtained. It was hoped that the monthly meetings would continue to prove equally instructive and entertaining, and that the less scientific members of the Society would continue to take part in the conversations which generally succeed the lectures and observations of a more scientific character.

At the conclusion of their Report, the Council begged to recommend to the members and friends of the Society the expediency of enlisting new supporters in its ranks, to enable it to carry out the numerous and important objects of public utility which its prospectuses held out for accomplishment. The Society's operations had hitherto been of necessity conducted on a very limited scale, and a considerable accession of new subscribers was required to empower it to undertake those general projects which would render its existence more extensively advantageous to the community.

His Grace the Duke of Buccleugh was then elected President, in room of the Earl of Liverpool, and the five new members of the Council in place of five that retired from office.

Some admirably-mounted specimens of rare birds were afterwards exhibited by Mr. Blyth, which had been obtained, a few days before, in the London markets. Among them was an exquisitely beautiful specimen of the elegant Squacco Heron (*Ardea ralloides*), in fully adult plumage, which had been shot in Suffolk; and the little Hazel Grouse of continental Europe, the Old World analogue of the well-known Ruffed Grouse of North America, forming with it a distinctly characterized sub-genus, with partly naked legs. The flesh of the latter was stated to be as white as that of a chicken; whereas, in the true Grouse and Ptarmigan, the pectoral muscle was well known to be dark-coloured. Mr. Blyth then discoursed for some time on the general structure of the class AVES, and exhibited analogous portions of the skeletons of various groups, to illustrate the differences which they presented. He dwelt especially on the importance of studying all parts of an animal's structure, in order to attain a just idea of its systematic relations; and expressed a wish that the museum of the Society should be select rather than extensive, affirming that a comparatively small number of species, illustrative of the principal types or models of structure, would amply suffice for scientific purposes, if exhibited in all the progressive stages of their outward covering, and also in the various differential details of their anatomy. N. A. Vigors, Esq., M.P., followed with some observations to the same effect, remarking how necessary it is for those who desire to advance scientific zoology to penetrate somewhat deeper than the mere surface. Of course no classification could be relied on which was founded on only one system of organs, whether these were exterior or internal; it was on the totality of characters that the natural system reposed, upon the whole rather than a part; and an arrangement based on the entire conformation of organisms must necessarily be permanent, and constitute a secure foundation for extensive generalizing.

ZOOLOGICAL SOCIETY.

April 10th.—Professor Owen read a paper on the organs of deglutition of the Giraffe; in which an adequate reason was assigned for the privation of voice in this interesting quadruped. The same gentleman then proceeded to describe in detail the alimentary organs of that extraordinary bird, the *Apteryx* of New Zealand, a specimen of which, in spirits, had recently been presented to the Society by the noble President, the Earl of Derby. The œsophagus was found to be narrow, and destitute of any enlargement or craw; the stomach of small size, and partaking rather of the character of a membranous stomach than of a true gizzard; the intestine was slender, and furnished with large cœca; and the contents of the stomach proved to be the remains of insects, traces of which were likewise met with in the cœca. In short, the general characters presented an approximation rather to the Ostrich and Rhea type, than to that of the Emeu and Cassowary; and it should be remembered that the *Apteryx* also resembles the former genera in the circumstance of its feathers being quite destitute of the accessory plume, which, in the Emeu and Cassowary, attains its maximum of developement in the whole class. Mr. Blyth next exhibited a Duck obtained in the London market during the last week in March, which proved to be the American Widgeon, a species new to the fauna of this country and of Europe. It had been purchased for a variety merely of the Common Widgeon, under which supposition a female of the same species that accompanied it had unfortunately been passed over, though not without some hesitation on the part of Mr. Bartlett, who secured the male. This species is, to a certain extent, mediate in its characters between the Common Widgeon and Teal, having the narrower and more lengthened bill of the latter, with an analogous (but less defined) green patch on the sides of the head. The specimen exhibited had also a few obscure Teal-like spots upon the breast. It appeared to be a young bird of the preceding year. The tracheal labyrinth was much smaller than in its European analogue. Mr. Gould remarked the interest attached to the circumstance of American birds straying across the Atlantic, and afterwards described a few new species of birds from South America. He then produced two large skins of the Bornean Ourang-outang, one that of a nearly full-grown male, the exhibition of which excited very considerable interest; and Professor Owen remarked that the extraordinary dimensions (seven feet high) ascribed by Dr. Abel to an adult animal of this species, must indicate that the measurement had been taken not from head to foot, but from the extremity of the fingers to that of the toes, in which case, from the great length of the arms, it was probably accurate.

April 24th.—Mr. Waterhouse exhibited the skins of two *Mammalia* from India: the first a species of Mangouste, nearly allied to the *Herpestes brachyurus*, (Gray), from the same locality, but larger and of darker colour, with the tail longer, for which he proposed the name of *H. fuscus;* the other a small *Gerbilla*, which he characterized under the designation *Cuvierii*. A long paper from Mr. Martin was read next, on the anatomy of the Spotted Cavy, of which illustrative preparations and drawings were placed on the table. The affinities of this animal with the *Coypu* and other genera of *Rodentia* were indicated, as deducible from its internal structure.

May 9th.—A large collection of quadruped skins, from the interior of Fernando Po, was laid before the meeting, which had recently been presented to the Society by G. Knapp, Esq. Among them, were no less than seven undescribed species, which Mr. Waterhouse characterized as fully as their mutilated condition would permit of. Of the genus *Colobus*, a remarkable group of African Monkies, destitute of a thumb to the fore-hands, were examples of two; one of them a large animal, with uniformly black and very long hair, to which the name of *C. satanas* was applied; the second was named after Pennant, and differed from the "Bay Monkey" of that author's *History of Quadrupeds* in having the cheeks and throat white, the back rusty-black, the sides of the body bright rust colour, and the under parts dirty yellow. There were likewise two Monkies referable to the genus *Cercopithecus*. For the first Mr. Waterhouse proposed the name of *C. martini;* this species very nearly resembles the *C. nictitans*, but differs in being of a somewhat paler colour, and in having a white throat. To the second the name of *C. erythrotis* was applied, from the circumstance of its having bright-red ears; the tail, also, is of a bright rusty-red colour: this animal resembles, in many respects, that known as the Moustache Monkey. A new Genet was then characterized, under the specific appellation of *Genetta Poensis*. It is distinguished from all the previously discovered African species of *Genetta* by its bright yellow-brown colouring, and the greater number of spots and markings upon its body. A new Otter was also found amongst the skins. This animal is smaller than the British species, and of a brighter colour; the throat, cheeks, and sides of the neck, are of a deep golden colour. The last was an Antelope, which Mr. Waterhouse believed to be allied to the Harnessed Antelope *(Antilope scripta)*, but the imperfect state of the skin rendered it impossible to assign its affinities with certainty. Like the Harnessed Antelope, it has a black mark along the middle of the back, but is deficient of the white markings on the sides of the body, whence that animal derives its name. The colouring is deeper and richer than that of the Harnessed Antelope, and the neck is of a brownish colour. In addition to the above, a new species of *Cercopithecus*, from Sierra Leone, was characterized, under the specific name of *C. Campbellii*. This animal is of small size, and remarkable for the great length of its hair.

In the course of the ensuing conversation, Mr. Charlesworth announced that he had been informed by the late governor, Col. Campbell, that Chimpanzees are procurable, without much difficulty, from the interior. The large *Colobus* which had been named that evening *C. satanas*, he had the same authority for stating, was by no means rare. It had been found, however, to be extremely difficult of reconcilement to captivity, even when taken young; pining and moaning piteously when confined, and refusing to take any sustenance. Mr. Ogilby then made several observations, particularly to the effect that the stimulus which had lately been given in that quarter was likely to conduce to the discovery of many more novelties in the neighbourhood of the British settlements on the west coast of Africa. Mr. Ogilby then entered into various details on the history of the successive discovery of the different species of *Hypsiprymnus*, Potoroo or Kangaroo-rat; and concluded by characterizing five species that were on the table, which he respectively named *H. setosus*, *melanotis*, *myosurus*, *cuniculus*, and *formosus*.

MAY 22nd.—The Rev. T. Hope called the attention of the meeting to the ravages committed in various localities on the British coast by the *Limnoria terebrans*, and exhibited some specimens of wood that had been perforated by it under peculiar circumstances. He stated that no sort of wood was exempted from its depredations, and contended for the necessity of constructing metallic piers, which, if properly varnished, will long resist the corroding action of salt water. Mr. Yarrell then exhibited a specimen of an Anchovy which had been taken in a White-bait net that morning in the Thames, being the first instance which he had known of its occurrence in that river, although in the Severn it was not unfrequent, and was numerous around Devonshire and Cornwall. Indeed, so plentiful had this valuable fish been lately ascertained to be in Swansea Bay, and one or two neighbouring localities, that a company was about to be formed for the purpose of capturing it on an extensive scale. It might easily be distinguished from all the ordinary species of *Clupea* by the relative proportion of the jaws, the upper of which exceeded the lower. Mr. Yarrell also related an instance of the Common Herring living for many years and propagating freely in fresh water, where, however, it did not attain a large size, but was very superior in flavour to those taken at sea. ' Mr. Martin exhibited some species of reptiles sent from the Phillippine Islands by Mr. Cummings, to whom the Society was indebted for many interesting skins of animals, together with some valuable observations on their habits. A species of Iguana, named by him, after the donor, *I. Cummingsii*, was particularly remarkable in having long spinous processes supporting a membranous caudal crest, a character which was observable only in the male. A species of *Veranues* was also characterized. Some skins of *Mammalia* forwarded by the same correspondent were next described by Mr. Waterhouse, who pointed out a new Paradoxure, which was stated to be a great destroyer of poultry, of which it devoured only the bowels. There were three specimens of it, an old male, and two young animals. A Genet, suspected to be new; an undescribed Squirrel; a small but undetermined *Galiopithecus;* and specimens of a Tarsier, formed part of the same collection; and a highly interesting notice of the manners and habits of the last-named animal was read before the meeting. Mr. Waterhouse then exhibited the skins of twelve species of *Mammalia* new to the Society's collection, which, on that account, had been presented by M. Pictet, of Geneva. Among them was a remarkably fine example of the Collared Sloth (*Bradypus torquatus*), which completed the series of that genus, as ascertained at present. The others were, *Stentor fuscus*, *Cebus monachus*, *Callithris melanochia* (three American Monkies), *Chei-*

rodon moko, *Cavia australis*, and *C. rufipes*, a Lemming, two species of *Echymys* (distinct sub-generic forms), and *Cervus rufus* and *C. nemorivagus*, which last appeared to be different from that recognised by the same name in the museums of this country.

JUNE 12th.—An excellent paper was read by Dr. Canter on a new genus of Hooded Serpents from India, which that gentleman had previously characterized in the *Asiatic Researches*, under the name *Hamadryas*. The species exhibited was the only one which he had personally ascertained, although he had received information of two others, which were distinguished by separate Hindoo names. They grew to a large size, and the species to which he drew the attention of the meeting attained a length of twelve feet. It was stated to inhabit hollow trees, and to prey on other Serpents and arboreal Lizards, which regarded it with much instinctive dread. Its power of abstinence is very inferior to that of the Cobras and other allied genera. From experiments with its venom, it appeared that this is less intense than in the Cobras, though still of alarming virulence. It was found to redden litmus paper, and more readily after being kept for a short time; but on keeping it long it became gradually inert, as Mr. Owen affirmed had also proved to be the case with the venom of another serpent with which he had experimented. An interesting account of its habits and mode of attacking prey was then detailed, as personally witnessed by the author; who bestowed on it the specific appellation *ophiophayus*. This notice was illustrated by some admirably executed representations of the anatomy, and of the reptile, taken from life, in the peculiar attitude it assumes when about to seize its prey. Mr. Owen then read a minute description of the respiratory organs of the *Apteryx*, which presented several interesting peculiarities. There were no abdominal air-cells; and the thoracic were separated from the other viscera by a stout diaphragm. The general structure indicated that although this remarkable bird may run very swiftly for a time, as is known to be the case, it apparently could not protract its exertions, but would soon become wearied: considered in this light, its degree of locomotive ability is perhaps lower than in any other of the class. Its nocturnal habits are evidently in accordance with this conformation. Mr. Harvey next exhibited some specimens of fishes and zoophytes procured in the vicinity of Teignmouth; and the remainder of the evening was occupied in discussing the communications of Dr. Canter and Mr. Owen.

⁂ We hear that the Zoological Society have recently added a young male Ourang-outang to their menagerie, which promises to do as well as the female which has now lived some time in their possession, and continues in sound health. The new-comer is a younger animal, not more than half the size of its companion. Both have been cheerful and lively since their introduction; and their is every reason to look forward to their living to maturity.

CATALOGUE OF THE SPECIES OF THE GENUS CYTHEREA, OF LAMARCK,

WITH THE DESCRIPTION OF SOME NEW GENERA AND SPECIES.

By John Edward Gray, F.R.S.,

OF THE ZOOLOGICAL DEPARTMENT OF THE BRITISH MUSEUM.

British Museum, 1st June, 1838.

Dear Sir,

As you have been kind enough to express a wish that I should send you a zoological paper for insertion in your useful journal, I have great pleasure in enclosing you a monographic revision of the Genus *Cytherea* of Lamarck, which I have found necessary to divide into several genera, and to which I have added the description of the new species which are in the collection of the British Museum, or in my private cabinet.

Yours, very truly,
John E. Gray.

To the Editor of "The Analyst."

Tribe Cythereina.

The hinge with three cardinal teeth in each valve, and with more or less developed anterior lateral teeth.

A. Foot ovate, lanceolate, subanterior; shell ovate.

CYTHEREA.

Shell triangular, solid. Hinder hinge tooth elongated, crenulated. Anterior tooth short, large. Margin entire. Syphonal inflection very slight.

* Two middle teeth of left valve unequal; front one longest, bifid.

Cy. lusoria, Lam. E. M., t. 270, f. 1.
Cy. castanea, Lam. E. M., t. 269, f. 1.
Cy. zonaria, Lam. Chemn. vi., f. 344.

** Two middle large teeth of left valve sub-equal, entire.

Cy. meretrix, Lam. E. M., t. 268, f. 5–6.—the *C. petechealis*, Lam., does not appear to differ.
C. triradiata. Chemn. vi., f. 358.
C. punguis, Gray, *Ann. Phil.*
C. exilis (*Venus exilis*, Dillw).

*** Front middle tooth of the left valve smaller, narrow; hinder longer.

C. mitis (*Venus mitis*, Chemn.)
C. casta, Lam.
I have not seen *C. nebulosa*, Chemn. vi., f. 359-361.

Cytherea corpulenta, n. s.—Shell thick, smooth, yellowish.—Umbones white, with zig-zag yellow lines. Hinder slope livid.

Cytherea sulcata.—Shell trigonal, cordate, rather solid, white, with rather deep, regular, concentric ridges. The hinder slope flattened, purple, with small regular ridges.

MEROE (Schum.)

Shell ovate, with a deep, impressed, posterior slope. Edge crenated. Hinder hinge tooth elongated, crenated. Anterior lateral tooth short, strong. Syphonal inflection moderate.

Meroe picta (*Venus meroe*, Linn.)
Meroe scripta (*Donax scripta*, Linn.)
Meroe solandri (*Cytherea solandri*, Gray; *Venus hynans* Solander, Wood, Supp., t. 2, f. 11).

GRATELOUPEA (Des Moulin).

Shell ovate, edge entire. Hinder hinge tooth deeply transversely divided into lobes; anterior lateral tooth short, large. Syphonal inflection moderate.

Gratel. irregularis (Donax irregularis, Basterot).

Gratel. hydana (Cytherea hydana, Conrad; *Grat. Moulinsii,* Lea.)—*Fossil,* lower tertiary, America, Alabama.

Gr. cuneata, n. s.—Shell thick, wedge-shaped, round, and rather produced in front. The umbones rather behind the middle.—*Fossil,* my collection.

TRIGONA (Megerle).

Shell triangular, edge even. Hinder hinge tooth torn. Anterior lateral tooth elongated, compressed far from the others.

Trigona donacoides (Venus donacoides, Gray, Wood, Supp., t. 2, f. 17.

Trigona stultorum (Venus stultorum, Gray, Wood, Supp., t. 2, f. 2.

* *With three narrow laminar, sloping, hinder teeth in the right valve; hinder lateral teeth long.*

Trigona Byronensis.—Shell trigonal, cordate, rather ventricose, white, with interrupted brown rays, and zig-zag brown lines on the slope; lunule white; inside white; umbones purple.

Var.—Shell white, without rays or lines.

Inhabits Pacific Ocean.—Capt. Lord Byron.

** *And with two large, oblique hinder teeth in the right valve, inner one largest; lateral teeth short.*

Trigona corbicula (Venus corbicula, Lam.)

Trigona ventricosa.—Shell ovate, trigonal, ventricose, pale brown. Hinder slope flattened, very broad.

Trigona planulata, Sow., Gen., f. 2.—Shell trigonal, thin, rather compressed, whitish, with unequal brown rays. Umbones purple with two white rays; inside purple, white-edged.

Var.—Rather wedge-shaped; more produced in front. Inhabits Mexico.—Capt. W. Belcher.

Trigona bicolor.—Shell trigonal, thin, white, pellucid. Hinder slope purple. Inside iridescent. Inhabits coast of Africa.—Capt. E. Owen, R.N.

Trigona lævigata.—Shell ovate, trigonal, rather thin, pellucid, pale fulvous, white varied, slightly concentrically wrinkled.

Trigona angulifera (Cytherea trigonella, Lam., No. 28?—Shell oblong, triangular, thin, pellucid, rather swollen, white, varied with zig-zag concentric lines. Hinder slope purple. Internally purple varied.

Trigona tripla (Cytherea tripla, Lam., 12; *Venus tripla,* Linn., Chemn., vi., f. 330–332.

*** *With a rudimentary rugose hinder tooth in the right valves. Anterior tooth distinct.*

Trigona radiata, n. s.—Shell trigonal, rather compressed, solid, reddish, with distinct darker zones and narrow white rays.

CHIONE (Gray).

Shell ovate, edge entire or crenulated. Hinder hinge tooth entire, anterior lateral tooth short, conical, close. Syphonal inflection moderate.

Chione erycina (Cytherea erycina, Lan.) *Cy. pectoralis,* Lam., is a variety.

Ch. lilacina (Cyth. lilacina, Lam.)

Ch. tortuosa (Cytherea tortuosa, Sow., Zool. Proc., *Panama.)*

Ch. vulgaris (Venus Chione, Linn.)

Ch. aurantia (Venus aurantia, Chenn.)

Ch. pulchra (Venus pulchra, Gray, Wood, Suppl., f. 16.

Ch. impar (Cytherea impar, Lamk., not Chenn.)

Ch. Kingii (Venus Kingii, Gray, Wood, Suppl., t. 2, f. 9; *Cyth. citrina,* Lamk.?)

Ch. albida (Venus albida, Gmel., List., t. 273, f. 109).

Ch. læta (Venus læta, Chenn. vi., f. 353),

Ch. sulcatina (Cyth. sulcatina, Lam., Chemn. vi., f. 271–72).

Ch. circinnata (Venus circinnata, Born., t. 4, f. 8; *V. guineensis,* Gmel.)

Ch. Dione (Venus Dione, Lin.)

Ch. lupinaria (*Venus lupinaria*, Lesson Cent, t. *V. Dione* β, Broderip.)

Ch. rudis (*Cyth. rudis*, Lam., Poli. Test., t. 20, f. 15–16.)

Chione maculata (*Venus maculata*).

Chione squalida (*Cytherea squalida*, Sow.) California.

Chione Lamarckii.—Shell oblong, subcordate, rather thick, solid, smooth; pale brown, with unequal white rays. Hinder slope punctulate. Lunule lanceolate, purple-brown; inside white, edge purplish. Length 2¼ inches.

Chione apicalis.—Shell oblong, subcordate, rather thick, solid, smooth, yellowish-white, with a few arrow-shaped pale-brown spots above. Umbones red-brown; inside white.

Chione floridella.—Shell ovate, subcordate, rather thin, smooth, polished, with some deep cross grooves on the upper part of the hinder slope. Pale brown, with darker, narrow, articulated rays; inside pale orange, purplish-edged. Front hinge tooth compressed, and close with the others.

Var.—Whitish, with an anterior and posterior very broad darker ray.

Inhabits Africa, the Coast of Guinea.

Chione striata.—Shell ovate, cordate, solid, thick, tumid, rude, concentrically striated. Yellow or orange, purplish behind. Hinge margin rather thick. Lunule ovate, lanceolate, yellow; inside white, purple behind. Inhabits New Holland?

Chione virgo.—Shell subovate, cordate, tumid, rather thick, roughish, concentrically striated. White, apices of umbones rosey. Hinge margin moderate; inside pure white.

Chione purpurascens.—Shell roundish, subcordate, rather thick, solid, smooth; front and upper part of hinder sides with rather deep concentric grooves. Purplish; umbones paler. Hinder slope punctulate; inside white.

Var.—Paler, smoother, umbones concentrically striated. White, with zig-zag brown lines. Lunule purple. The hinder hinge tooth of the older specimens are flat and very rugose. Intermediate between *Cytherea* and *Chione.*

Chione badia.—Shell ovate, subcordate, rather compressed, polished, yellow brown, apex purplish, regularly concentrically grooved. The middle of the lower part smooth, grooveless.—May be the young of *Chione purpurascens.*

CIRCE (Schum.)

Shell ovate, margin entire. Anterior lateral tooth small, hinder hinge tooth two cut. Syphonal inflection none.

Circe picta, *Cyth. picta*, Lam. Ency. m. t. 273 f. 2.

Circe castrensis, *Venus castrensis*, Linn. *V. australis*, Chemn. *Cyth. ornatu*, Lam. *Venus Lorenziano*, Chemn. xi. f. 1961, 62.

Circe scripta, *Venus scripta*, Lam. Var. *Cyth. undatina*, & *Cyth. plicatula*, Lamk.

Circe divaricata, *Venus divaricata*, Gmel. *Cyth. divaricata*, and *C. testudinalis*, Lank.

Circe corrugata, *Venus corrugata*, Chemn. *Cyth. rugifera*, Lam.

Circe gibbia, *Cyth. gibbia*, Lam.

Circe pectinata, *Venus pectinata*, Linn.

Circe numulina, *Cytherea numulina*, and *Cyth. cuneata*, Lamk.

Circe dispar, *Venus dispar*, Chemn. *Cyth. muscaria*, *C.pulicaris*, and *C. mixta*, Lam.

Circe arabica, *Cyth. arabica*, Lamk. *Venus lentiginosa*, *V. bicolorata*, *V. arabica*, Chemn. *V. callipyga*, Born.

Circe Crachrodii—Shell oblong, roundish thick, solid, rather ventricose, polished, smooth, with distant concentric grooves in front, and rather irregular striæ behind, White, blotched, spotted and marbled with purple brown, hinder side brown varied, inside rosy, edges brown varied, entire.

In the left valve there is a kind of hinder lateral teeth under the hinder end of the cartilage.

Circe litturata, n. s.—Shell ovate, cordate, rather ventricose, rather solid, regularly concentrically grooved, white or purplish, with angular red brown lines. Umbones smoothish. Lunule lanceolate. Inside white, purplish varied, margin entire.—*My collection.*

Circe crocea.—Shell cordate, roundish rather convex, slightly concentrically grooved. Yellow, with obscure brown lines on the hinder side: inside yellow, edge entire.—*My collection.*

Circe planata.—Shell oblong, subquadrate, rather narrower in front, browner and rounder behind. Compressed, thin, white pellucid, smoothish; very finely and closely concentrically striated; inside white; margin entire.—*My collection.*

Circe sulcata.—Shell cordate, trigonal, rather compressed, solid. Yellow brown, with two or three brown rays not reaching the umbo, finely radiately striated, and with close, blunt, regular, concentric ridges, crossed by some obscure curved grooves on the ends. Lunule lanceolate, brown lined, inside rosy white. Margin entire. —*My collection.*

Somewhat like *C. scripta,* but rather more convex, striated, and umbo regular, not flattened. See also *Venus caliste,* Gmel. from Schrœt Einl t. 8, f. 8.

DOSINA (Gray).

Shell ovate; hinder hinge tooth entire, anterior lateral teeth small, rudimentary syphenal inflection small.

* *Anterior lateral tooth in left valves large.*

Dosina Lamarckii, Venus reticulata, var. 2, Lamk. *V. subrostrata,* Wood, Supp. fig. 7, Ency. Meth, t. 267, f. 7, Chemn. vi. f. 306. *V. subrostrata* of Lamarcks is a different species.

Dosina casina, Venus casina, Lamk. Lin. Trans. viii. t. 2, f. 1. *Venus Rasterucii,* Payraud.

Dosina rugosa, Venus rugosa, Gmel. *V. rigida,* Dilwyn.

Dosina cingulata, Venus cingulata, Lamk. Schroet. Eirl. t. 8, f. 6, 309, Africa.

Dorsina Zelandica, Gray, Yates' New Zealand, 309.

** *Anterior lateral tooth small, sometimes obliterated.*

Dosina veerrucosa, Venus veerruicosa, Linn. *V. Lemanii,* Paraud.

Dosina reticulata, V. reticulata, Linn. *V. corbis,* Lamk.

Dosina puerpera, V. puerpera, Linn.

Dosina Listeri, V. puerpura var., Linn. Sow. Gen. f. Ency. Meth. t. 278, f. 2.

B. Foot broad, lunate, inferior. Shell orbicular, solid, compressed.

ARTHEMIS (Poli.)

(*Orbiculus,* Mergle; *Assa,* Leach, Risso.; *Exolea,* Brown.)

Shell orbicular; edge entire. Anterior hinge tooth of the left valve rudimentary Syphonal inflection angular, ascending, acute.

Arthemis excisa, Venus excisa, Chemn. vii., f. 400–401.

A. concentrica, Venus concentrica, Gmel.

A. exoleta, Venus exoleta, Linn. *V. lentiformis,* Sow.

A. lincta, Venus lincta, Maton. *Cytherea lincta,* Lamk.

A. lupinus, Venus lupinus, Poli. *Cyth. lunaris,* Lamk.

A. variegata, V. exoleta variegata, Chemn. vii. f. 407, *V. australe,* Quoy. Vo. Astrol, t. 84, f.

Var.?—*Cyth. rufa,* Lamk.

A. juvenilis, V. juvenilis, Chemn. vii. f. 405. *V. juvenilis,* Gmel.

A. prostrata, Venus prostrata, Chemn. vi. f. 298. *Venus excavata,* Gmel. Schroet. Eil., iii. 8, f. 10. China, J. R. Reeves.

Arthemis subrosea (Gray).—Yates' New Zealand, 309.

Arthemis ponderosa.—Shell orbicular, rather convex, very thick, solid, heavy. Smooth, covered with a pale, yellowish periostraca; umbones and extremities concentrically grooved. Disk opake white; hinge margin very thick. Anterior tooth rudimentary. Lunule deep, short. Like *A. concentrica,* but heavier, larger, and less grooved.

Arthemis tumida.—Shell suborbicular, convex, solid, rather pellucid, white, with close, fine, regular, concentric, ridges, the altemate ones becoming rather broader on the hinder side. Lunate short, cordate; hinder slope rather short; slightly curved.

Arthemis Bruguieri.—Ency. Method, t. 277, f. 1.

Shell suborbicular, compressed, thin, white, with rather close, concentric ridges; the altemate ones ending before they reach the hinder slope; the front and hinder ends of the larger ones laminar, and forming teeth-like processes on the edge of the hinder slope. Lunule small, cordate.

Arthemis bilunulata.—Shell suborbicular, compressed, pale, whitish, with obscure brown rays, and close, regular, concentric ridges, which are slightly elevated at each end, and form a series of small teeth on the edge of the hinder slope, and others on the edge of a large lanceolate, lunule-like, smooth space, surrounding the small cordate lunule.

Arthemis africana.—Shell orbicular, rather convex, thin, brownish white, rather pellucid, with regular, close, very fine concentric grooves. Lunule short, cordate; inside brownish, polished.—*Var.* —Thinner, nearly smooth striæ, very fine.

Inhabits coast of Africa.—Capt. E. Owen, R.N.

THE MUSICIAN ABOUT TOWN.

UNDER the above title, it is our intention to present our readers with a record of prominent events and transactions that exclusively belong to Music in its scientific and artistical character. Both as a science and an art, Music has, within the last quarter of a century, acquired such an ascendancy in the list of accomplishments requisite to complete an Englishman's education, that we no longer hear the study of it treated as an elegant frivolity by the practical or moral philosopher; or as a pleasing, dexterous attainment, proper to while away a listless hour, by the possessor of aristocratic leisure: or, lastly, as an enervating and engrossing, and therefore dangerous, relaxation, by the man of mercantile pursuit: which last section of the British community, by the way, at the moment of denouncing the fascination of a social concert, could, with an edifying inconsistency of action, devote whole nights of every week to a whist club. Over and over have we heard precise men of business, who have also been persevering card-players, very gravely protest against the allurements of a quartett society, upon the sole ground that it distracts a young man's mind from his mercantile vocation. This prejudice has so far faded away that there is scarcely a periodical work throughout the kingdom that does not devote a portion of its columns to musical intelligence of the ordinary popular class, while many of them, more especially dedicated to a science or an art, nevertheless contain opinions (and frequently judicious ones) upon musical performances, while some assert their pretensions in the science of counterpoint. Even *The Gardener's Gazette* has its musical editor, who speaks "with authority, and not as a *scrub*," upon consecutive fifths and inconsequent resolutions. Various circumstances have conspired, within the present century, to improve the naturally fine character of the English; but nothing has contributed so effectually to soften, without effeminizing, the national manners, as the increased and increasing cultivation of the science of Music. The springing up of choral societies all over the country—more especially in the dense manufacturing districts—is the result of this improvement in taste. The same effect may be observed in London, where the amateur choral societies are multiplying and increasing to a remarkable and satisfactory extent. The performances of the "Sacred Harmonic Society," at Exeter Hall, now hold an important station in the rank of metropolitan recreations; and the prospect of its three or four hundred members, almost all of them mechanics, or persons engaged during the day behind their counters, performing at night the most lofty compositions of the great musical epic writers, is an object worthy of admiration, and doubtless is producing a beneficial effect upon the thousands who come to improve their moral and intellectual perceptions by listening to those divine homilies. It has frequently been remarked, but with what truth we need not here determine, that the lower-middle class of English society are not merely leaving—that they have already *left*—the aristocracy leagues in the rear upon all questions of intellectual refinement. The Italian Opera of London is one example in confirmation of this remark, as regards the cultivation of Music. The compositions listened to night after night by our aristocracy, with so much complacency, at Her Majesty's Theatre, are confessedly, as works of invention and imagination, of the most ephemeral character. Were it not for the brilliant organs which give them utterance, they could not be endured for a night. The majority of that audience estimate the music by the singer of it. They go to hear the trills and flourishes of Rubini, and the *modern* opera: but the singer is the main attraction. Upon a non-subscription night, however, if an opera of Mozart's be put up, the house is notoriously filled by the middle ranks of society; and the organ of "the fashionable world" amuses its dainty readers by expressions of horror at the vulgar complexion of the pit audience. The foreigner who should estimate the English taste for music by the compositions performed at the Italian Opera, would make as erroneous a calculation as if he were to judge of our progress in mechanism and fine art by the prizes distributed at some of our public institutions for unmeritorious inventions, and flowers and butterflies painted on vellum. It is to the private societies the foreigner must go, to perceive what progress classical music is making in this country: to the quartett and quintett parties, public as well as private; to the societies which meet for the practice of the Masses of Haydn, Mozart, Beethoven, Cherubini, and Hummel. He should observe the audiences at these meetings; at the Sacred Harmonic Society, the Sacred Choral Society, the Classical, City Classical, and Choral Harmonists; at the Quartett and Classical Concerts; at the pianoforte soirées of Moscheles and Neates: at all which meetings music is now listened to and evidently relished, which five and twenty years ago would have been laughed at, or performed to empty benches.

All these are indications of the prevailing taste for good music. The very circumstance of the *amateurs* having forced the reproduction of Beethoven's choral symphony, which at its first performance (twelve or fourteen years ago) was utterly uncomprehended, and therefore utterly marred, is another "sign of the times," and should indicate to the members of the Philharmonic Society the necessity of appointing directors prepared to go hand in hand with, if not to be in advance of, the age. This must be done, or that society will lose its well-deserved supremacy in our musical republic. Another indication of the onwardness of Music in England is, that a society is at the present moment forming, the object of which is to facilitate the introduction of music in schools, to the extent required for teaching its elementary principles; and this is proposed to be effected by the means of tracts and other cheap works, and by lectures. To provide teachers for singing, and the notation of music. To assist in forming choral societies throughout the country, more especially without instrumental accompaniment, on account of the expense of such addition. The reputed judgment and known predilection of Her Majesty for a science so calculated to soften and refine the manners of her subjects, will, it is hoped, prompt her at once to become the patroness of so meritorious a plan.

In proceeding to our proposed summary of the metropolitan performances, courtesy rather than justice demands that the Italian Opera should take the precedence. With a company and an orchestra that were probably never equalled in this country, the subscribers, up to the present time, have been supplied with less novelty than during any former season within our remembrance. Bellini and Donizetti have been the twin buckets in the well. Mozart, indeed, has three times inundated the house with his Don Giovanni, and every nook was occupied with grateful recipients of that eternal fountain. Donizetti's "Lucia di Lammermoor" was the first novelty, and owed its success (if such it might be called) chiefly to the masterly singing of Rubini; who was called upon to repeat the finale, although he kills himself! There can be no question that Donizetti has a genius for melody; but he appears not to have even an idea of dramatic effect. His operas are usually compounded of a hurly-burly of brass and blare, interspersed with a cavatina or two of graceful character. This alternation of noise and prettiness is the recipe from which the modern Italian composers manufacture their dramatic works. Donizetti is successor to Zingarelli in the Conservatorio at Naples, and, it is said, ranks with the first theoretic musicians of the present day; but that he wants judgment in the ordering of his orchestral effects must be acknowledged, from his eternally employing the full band, down to the great brass instruments, in the accompanied recitatives and solos, where effect and vehemence are not looked for. The critical ear is, therefore, continually annoyed with an anticlimax of fierce appeals without adequate motive, and mere noise unattended by dramatic passion. The case appears to be that these full orchestral effects are solely intended to produce so many reliefs to some pretty, unassuming cavatina. Donizetti evidently writes purely for money, and, by report, will finish an opera "to order," upon any subject, in six weeks. He is still under fifty years of age, and has written more than that number of operas. This is not surprising. Mr. Bulwer, or any other novelist, could produce romances quite as rapidly, if the public would be contented with a fiftieth repetition of the same thoughts recorded upon the arithmetical principle of permutation. All the phrases in the finale to the 'Lucia' have been heretofore so frequently repeated by the author that it becomes a task to retain one's attention to them. Nor, indeed, do the audience pretend to do so; they are hanging upon Rubini's tones. The "Parisina," by the same composer, is still less attractive, both in dramatic and musical pretension, than the former production. To the lover of the pure school of operatic writing, the compulsion to sit through a performance like that of the "Parisina," is exasperating work.

Mad. Persiani, the only addition to the company of this season deserving of record, made her first appearance in this country in the "Sonnambula," upon the re-opening of the theatre, March 23rd.—Her voice, which is a high soprano of considerable compass, brilliance, and flexibility, is rather defective in mellowness and weight; and we are inclined to think that this has arisen from an over-exercise of the organ, in order to attain the mastery of those surprising instrumental passages which she executes. Hence she has attained the complete command of the most distant as well as difficult intervals; and these she delivers with great freedom, and an absolute correctness of intonation. Moreover, Mad. Persiani sings like a musician, as well as with tasteful and mechanical refinement; for, upon the occasion of repeating a solo, she usually varies her embellishments and cadenzas, and always to the satisfaction of the most fastidious judges. She is wife to the composer of "Ines de Castro," the principal part in which opera was written for Malibran. She is likewise daughter of the celebrated tenor, Tactrinardi; and, to conclude our account of her, we have much pleasure in witnessing the steady increase of her popularity in this country; for we believe there is no doubt that much unworthy partizanship has been excited against this highly accomplished and estimable artist.

At Drury Lane Theatre, the operatic department has signalized itself by one reproduction and one novelty, both creditable to the orchestral and vocal resources of the establishment; and, as they deserved to be, both were successful. These were, Mozart's "Zauberflöte," and "The Gypsy's Warning," the music composed by Signor Benedict, pianist to the King of Naples. The story of "The Magic Flute," which, in its original state, can be compared only to the delirious dream of a German enthusiast; love, incantation, the Egyptian ritual, and mere buffoonery struggling on in admired perplexity, was reduced to something like common sense upon the present occasion; while the performance of the music was, upon the whole, respectable, the concerted movements scarcely so throughout. Miss Romer was the Pamina; Mrs. Seguin, as the Queen of Night, distinguished herself in the beautiful scena, "Non paventar" (we do not remember the words of the English version); and Phillips, although inferior to Dobler in the part of Sarastro, sang the "Qui sdegno," and "Possenti Numi," with exquisite purity of style and devotional feeling. Balfe and Giubilei, in Papageno and the Ethiop Monostatos, were equally zealous, and deserve honourable mention. The great drawback from this very creditable reproduction was the singing of Mr. Templeton, in the part of Tamina. Inefficiency with diffidence at once makes an appeal to the acerbest of critics: when we even suspect that the latter quality accompanies Mr. Templeton's deplorable ignorance he shall derive (from at least one of his critics) all the advantage of a generous consideration; but it were a misprison of justice to pass over his delivery of the exquisite aria, "O cara imagine," to say nothing of the alteration of Mozart's passages upon other occasions.

Mr. Benedict's opera would, in all probability, have retained a longer reign of popularity, had its plot been more interesting and less confused. The composer, who is a pupil of Weber, was already known to the English public as the author of some elegant songs; considerable expectation was, therefore, excited from the production of his opera, and neither the scientific musician nor the amateur was disappointed. Mr. Benedict has a thorough knowledge of the resources of an orchestra, and he may, perhaps, be charged with availing himself somewhat ostentatiously of those resources, almost to the suffocation of his melody. This objection, however, does not hold good as connected with the duets "Tell me, youth," and "Oh, do not give way!" which, being distinguished by gracefulness of design, are chastely and soberly accompanied. Among the concerted movements, "The Students' Glee," "Blest be the Home," and

"Welcome back the sweet Spring-time!" are the most popular; the former having been encored at every performance. The songs "He comes not yet" and "Scenes of my youth," are clear in outline, delicate in construction, and expressive of graceful and gentle emotion." Two other solos, sung by Phillips and Seguin, appear to have been addressed to "the groundlings," and they did not fail in their aim; for, being noisy and vulgar, they were duly appreciated, and unduly honoured. The same report may be made with regard to the overture, which, although perhaps the least meritorious of all the music in the piece, was tumultuously encored at its first performance.

In addition to his accomplishment in the theory of his art, Mr. Benedict is not surpassed (we might say equalled) by any professor before the public, in that rare but very valuable acquisition, the being a judicious accompanyist. He truly *waits* upon the voice, and with such exquisite tact, keeping the instrument ever subordinate, and watching the singer with so constant an assiduity, that the betrayal of a blunder must be an act of wilfulness on the part of the latter. In this delicate accomplishment we have never met with his equal, except in the late William Russell, organist of the Foundling, and Mr. Novello, both of whom were consummate accompanyists.

Having previously stated that only one "novelty" has been produced this season at Drury Lane, we were not unmindful of Mr. Balfe's opera of "Diadeste," which, having been brought out in great haste, and being, moreover, little better than a repetition of the composer's reminiscences of modern Italian phrases, it can scarcely claim the merit of *novelty*. Mr. Balfe's deficiency in original thought being so palpable as to be universally acknowledged, it is to be regretted that this clever and intelligent musician (which he certainly is) should sacrifice his interests so far as to scramble together and botch up, at a week's notice, the crudities of a flimsy school, however fashionable.

Mr. H. Phillips also produced, at his own benefit, an unpretending opera, entitled "Harvest Home," the words and music by himself. It was not favourably received; but as a courteous tolerance is always observed towards the productions of an artist at his own benefit, some of the critics in the daily press were doubly ungracious in treating with uncalled-for severity the praise-worthy attempt of a singer whose appearance before the public is always attended with welcome and approbation.

Since the production of Rooke's delightful opera of "Amitie" last year, no work of importance has been brought forward at the Covent

Garden Theatre. Auber's opera of "Le Domino Noir," got up in haste, enjoyed but a fleeting and ricketty existence. Mr. Macready is not yet sufficiently the philosopher to estimate music at its full moral and intellectual value. He considers an opera as useful only to the tragedian, that, like the symphonies between the acts, he may have breathing time, and the audience may recreate their travelled spirits: but that those mysterious combinations of sound constituting harmony with melody, should, according to their various character and construction, act upon the gentler or fiercer of human passions, he entertains, as we understand, not a shadow of belief, because (of course) they make not the remotest appeal to his own senses. Consequently, this characteristic indifference to music influenced his conduct as the interested manager of the theatre, and "Le Domino Noir" was hurried before the public with as little care as would be bestowed in arranging a procession in a tragedy. "The Out-post," an operetta, re-written by Serle from a French drama, the music by Hullah, had more care bestowed upon the bringing forward, and it met with a better reception. The character of the music being principally martial, it is not, we think, in Mr. Hullah's vein, whose taste and tendencies are of the gentle and placid kind. If we except a little straining after novelty in phrasing his motivi—especially when their prevailing features are not absolutely original—he is a pure and elegant melodist; and his concerted music is usually designed and conducted with freedom of manner, and in strict conformity with his dramatis personæ; while his orchestral accompaniments are rich and varied in colour, and never predominant and overpowering.

The Philharmonic Society, who naturally take the lead in the metropolitan concerts, have this season strengthened their orchestra with two additional violins, Messrs. Guynemere and E. W. Thomas, Willy and Marshall having joined the ranks; all valuable acquisitions; the veteran and respected Weichsel, with Mr. Dance, having withdrawn. Dando has been transferred to the tenors; another judicious move, for he is a superb tenor player; and that department of the band has been needfully strengthened by the addition of Alsept, Pensam, and J. Banister. His brother, H. J. Banister, who is an honorary member, and an accomplished violoncellist, should, if possible, be squeezed in, with at least one more double bass.

The first concert, which took place on the 4th March, was one of the richest in selection of the season. Mozart's Jupiter and Beethoven's Eroica were the symphonies performed. The solo performances were, Mayseder's second concertina for the violin, admirably executed by young Blagrove; and Mendelssohn's Piano-forte concerto in D Minor, which he himself played at the last Birmingham festival, by Mrs. Anderson. Unlike a large bulk of modern pianoforte compositions, the concertos of Mendelssohn are so thoroughly the result of large thought, with exquisite taste and feeling, that the performer has made but a small advance towards compassing the author's intention, who shall only have mastered his passages, severe as this task undoubtedly is; for not only must the performer be imbued with a knowledge of the greatest schools in music, fully to appreciate his author's ideas, but should at the same time possess a refined as well as sensitive organization, to give them due expression. Mendelssohn is now the bright star in the ascendant, and there is little doubt that each coming year will confirm this opinion. His music is of that character which dilates in the mind with reiterated acquaintance, a result with is signally observable in studying his magnificent oratorio. Mrs. Anderson's performance of the concerto, upon this occasion, somewhat disappointed the audience, and distressed her friends, who knew beforehand that she had been the whole day previous so much indisposed as to have entertained the thought of declining to play at all that evening. The lady, however, made ample amends for the untowardness of this casualty, by repeating the composition at her benefit concert, when she performed with as much vigour, self-possession, accuracy, and feeling, as we ever remember to have seen in her.

The symphonies at the second concert were the Nos. 8, both of Haydn and Beethoven. After these the distinctive features and novelties of the evening were, a clarinet concerto by Mozart, apparently an early composition, performed by Willman; a quartett of Beethoven, in D, by Loder, Watts, Tolbecque and Lindley; and Mendelssohn's overture to the "Isles of Fingal." The second and last movement of the concerto, but especially the former, the andante most generally pleased: the first we thought not only too long, but the passages seemed too frequently repeated, and too much of the same character. Willman's playing was what it invariably is, a lesson to every solo performer, whether instrumental or vocal; instinct with neat execution and refined sentiment. It were difficult to imagine a more perfect union of tone with feeling of the author's intention than was displayed throughout the quartett, but these were so eminent in the andante that the whole audience gave vent to one simultaneous burst of approbation. Tolbecque, the tenor's reading of this movement could only have been the result of an accurate knowledge of his author's intention, with an exquisite taste in expressing it. "The Isles of Fingal" will be more fully appreciated, as the poetry of the design, with the composer's meaning, become known. It will then be classed among the greatest efforts of musical description and painting.

The novelties at the third concert were Spohr's symphony in C minor, No. 3; (No. 2 of Mozart opened the evening's performance) Moscheles concerto pathetique; and Beethoven's overture to "Coriolan." The first movement of Spohr's work is elaborate, with, we think, too apparent a display of learning: the andante, delicious in its subject, is in the instrumental treatment one of the most lovely specimens of orchestral writing that we could refer to. The finale, although worked in the most close and masterly way, will perforce remind every hearer of the last movement in Beethoven's D major. With all his mannerism and self-repetitions, Spohr ever and anon makes so direct an appeal to one's sympathies, that we feel disposed to throw all his egotism into the back gronnd. Moscheles' concerto, one of immense difficulty, did not impress us with the idea of the author's proposed design; its general character bearing little of the "pathetic" either in subject or detail. We speak from a single hearing, and under other disadvantages. Moreover, the composer must have been dissatisfied with his own performance, for his instrument seemed but sluggishly to answer his fingers. Beethoven's overture to "Coriolan" is a rousing and noble composition. Every bar of it contains proof of the energetic, self-willed, Pindaric imagination of that wonderful writer. It was played as the Philharmonic band ought to play such a production.

The fourth concert was signalized by the second performance of Beethoven's choral symphony, or "Sinfonie caracteristique;" the first having taken place only last year; for the attempt made in 1825, and which we witnessed, should, if possible, be blotted out of the Philharmonic records. Every thing was against it. The band had not had sufficient rehearsals, (and they should have had twenty) and some of the grave authorities in the profession, who judged of the author's design through a miserable rehearsal or two, pronounced the whole work to be an eminent specimen of "the aberrations of a great mind." Till the last year, therefore, it had been thrown aside, and would, in all probability, have been to this hour classed with the other miscalculations of wild and irregular geniuses. The directors of these concerts, we firmly believe, would not have attempted its resurrection had it not been for the unremitted enquiries, demands, and goadings of several distinguished amateurs, assisted by the higher members of the profession: and it is but justice to state, that among the former, the most efficient in his exertions was Mr. Gauntlett, who, by the means of his own pen in the pages of "The Musical World," and by enlisting other periodical writers on his side, induced the society to give this most stupendous effort of Beethoven's genius a full and fair trial. With good judgment, therefore, they selected Mr. Moscheles to be the conductor of it, who had so perseveringly studied the score as to know every feature by heart, and consequently was qualified to direct the band in their full developement. The performance, upon the present occasion, was more uniform and steady than last year, and a decided improvement throughout was manifest. The scherzo was taken somewhat more slowly, the andante rather faster, and in both instances we felt the alteration to be advantageous. Mr. Loder, the principal violin, was as firm as a rock. He had also made himself master of his author's score, and the result was, that a complete understanding was established between him and Mr. Moscheles, who has so completely identified himself with this extraordinary production that he will doubtless preside at its repetition every future season; for the Philharmonic directors will now as soon think of omitting the Jupiter as the No. 9 of Beethoven. Two solo performers also appeared for the first time in this country at the same concert. Hausman, a violoncellist, and Heinemeyer on the flute. The former possesses great command over his instrument, and his composition, which was well put together, proved him to be more than a mere mechanist. His tone, however, was feeble and *comby* in its character. Mr. Heinemeyer, in this latter qualification, left nothing to be desired; although in no one respect should we esteem him to be superior to our own first flute, Ribas.

At the fifth concert the symphonies were, Beethoven's magnificent C minor, and Haydn's No. 7. The solo performances were, a posthumous M.S. Concerto of Hummel, played by Mad. Dulcken; and a Quartett of Spohr, by E. W. Thomas, Watts, Tolbecque, and Lindley. The former composition will rank with the best works of that great master. Like all the writings of Hummel, it is most charmingly scored, and is replete with delightful melody and rich colouring. The andante is our favourite movement, and the Russian air is as novel as it is sparkling and vivacious. Mad. Dulcken has an extraordinary finger, and her playing is brilliant and energetic: her *forte*, however, rather displays force and vehemence than power, and to awe feeling she is deficient in the expression of tenderness. We could not avoid the reflection how the composer himself, or John Cramer, would, as it were, have yearned over that sweet slow movement, and how Moscheles or Thalberg would have fired the train of the finale. Mad. Dulcken *knocked out* those iterated notes in the subject as if she had a spite against them. Add to these objections the lady is accustomed to hurry her time. Mad. Dulcken has her merits, and considerable ones they are; but when injudicious people pronounce her to be "the finest player in Europe," it becomes requisite to refer to the *finest school* in the art, and institute comparisons. Mr. Thomas, in the quartett, drew our attention almost exclusively to himself. His style and execution are both excellent, and his tone sweet, but so gentle in character as to be scarcely sufficient for a large concert-room. We can believe him to be a delightful chamber violinist. The composition was a perfect specimen of the learned mannerism of Spohr, and tedious to the very verge of endurance. Mrs. Shaw's singing of Beethoven's grand aria, "Ah perfido," was perhaps the best vocal performance of the season at these concerts; which, at the same time, we acknowledge to be no compliment to the lady, for it has been much below par.

Beethoven's "Pastorale," and the divine E flat of Mozart, were the symphonies selected for the sixth concert, and they were performed in the most perfect style imaginable. The principal feature of this evening was the first appearance of Doehler, the new pianist. He performed a fantasia of his own upon subjects from the "Guilleaume Tell." From the specimens we have hitherto heard, we entertain not the most favourable impression of this really eminent artist's talents as a composer; and indeed all the time he was exhibiting his amazing mechanical accomplishment, we could not but regret that so much exertion should be thrown away upon music certainly unworthy of it; and indeed people begin already to weary of these eternal variations upon commonplace motivi. As a performer, however, Doehler is indeed a surprising artist. Brilliant, graceful, delicate in style and manner, with uncommon power and dignity. His manner of conducting his subjects in chords with the left hand in accelerated time, while a torrent of notes in accompaniment are proceeding with the right, forms one of the prominent features of his performance; and another is, the manner in which he contrives to maintain the subject floating above the torrent, without unnecessarily thrusting it into notice, is another characteristic of that wonderful command of finger and self-possession which distinguishes Thalberg's school of piano-forte playing; whom, we think, Doehler equals in all repects, excepting that perhaps the former has a grander style of delivery. It is needless to say that Doehler's exhibition was succeeded by a storm of applause.

Mons. Auguste Pott, a distinguished violinist, and a pupil, we believe, of Lipinski, also made his debut in this country upon the same evening. He performed his master's concerto in B minor. Mr. Pott is, we should suppose, almost without a rival in the mastery of the difficulties on his own instrument; for the coolness with which he executed his double stops, sixths, octaves, and tenths, was as remarkable as were his neatness and precision. The quality of his tone is inferior to that of De Beriot, but, we should think, greater in power; while in grace and delicacy of expression he is unquestionably inferior to that enchanting artist. On this same evening was performed, for the first time, an overture by Mr. Guynemer, an associate of the Society, entitled "The Exiles." By selecting this composition, and rejecting Mr. Potter's overture to "The Tempest," a composition by Kalliwoda, one also by Müller, an overture by Lindpairtter, and another by Onslow, the directors have placed themselves in the awkward dilemma of having preferred a composition greatly inferior to any of those named, and consequently that they are incompetent judges of merit, or that a spirit of intrigue and favouritism has arisen, and been allowed to prevail, in the council of direction. Suffice it to say that "The Exiles" ought never to have been heard after the trial-night of the Society; for it was not worthy of the author, who is a musician of real ability, and an accomplished violinist.

Spohr's grand characteristic symphony, "Die weihe der Töne," formed the principal novelty of the seventh concert. Haydn's Letter V. opened the second act. The former is a musical illustration of Pfieffer's poem, the "Ode to Sound," wherein the musician has, in almost every movement, overlaid his subject, and constantly repeated himself. Subjects from his operas, from the "Jessonda," and "Azor and Zenuira," floated before us like theses ramified into elaborate disquisitions. And indeed, to speak the honest truth, in scarcely more than one instance could we realize the author's intention, although a translation of the poem accompanied the programme of the concert. Not only, also, has the composer mystified his subject to the hearer, but to the performers he has needlessly laboured to accumulate difficulty upon difficulty; so that it would be a positive wonder to hear it executed correctly. Mr. Potter, the conductor, did his best, but how he was to direct an orchestra in a movement composed in triple, dual, and monal time, it were hard to imagine. Here, therefore, the wind instruments were all abroad, and the performance upon the point of going to pieces. What our opinion may be when we become as acquainted with the author's design and treatment as the band ought to be, we pretend not to say; but upon this, a second hearing, we hesitate not to avow that the excessive wire-drawing of his subjects fairly wearied us out. The other novelties in the concert were, a fantasia on the contra-basso, by a Sig. Müller, and a concertante for flute and oboe, by Ribas and his brother, a young lad. The music of Mr. Müller was positive trash, his performance more than respectable, and his tone feeble. In style and finish, Ribas is a delightful flutist, and his brother will be a most eminent player. In his present state of advance to perfection we have never heard him exceeded for steadiness of time, beauty of tone, and precise with neat execution. In feeling and delivering his phrases he reminded us of the exquisite cantabile of Willman. Having noticed the most creditable vocal performance of the season, we are in duty bound to signalize the reverse specimen, as much from its being a curiosity in its way, as to convey a censure upon the directors in allowing such an exhibition to pass, having heard it at rehearsal. The "Soave sia il uento" was sung by a Mad. Shrickel, Miss Hawes, and Mr. Phillips, and on the part of the soprano was so ingeniously spoiled, from the second bar to the close of the piece, both in time and tune, that the audience in all directions testified their sense of the insult The last concert of the season had not taken place when our number went to press. Want of space also prevents due notice of the other metropolitan concerts, which shall be supplied in the October number.

PROCEEDINGS OF PROVINCIAL SOCIETIES.

BIRMINGHAM LITERARY AND PHILOSOPHICAL SOCIETY.

At the commencement of the fifth session of this Institution, on the 7th of May, 1838, William Wills, Esq., the President, delivered an eloquent and instructive Address, of which the following is an abstract.

Gentlemen,—I request the favour of your indulgence for a few moments, while, pursuant to our usage, I take a brief review of the proceedings of the Society during the past year, and offer one or two observations upon its objects and future prospects. This periodical retrospect, when we arrive at the key-stone which separates the past from the coming year, prudence dictates to societies not less than to individual men.

On the first evening of the session, our esteemed and indefatigable secretary, Dr. Ward, whose removal from amongst us we must all regret, delivered a very interesting and instructive paper, which has since been printed in a respectable periodical, the ANALYST, upon that extraordinary remnant of antediluvian life, the Ichthyosaurus. When it is considered that the only unerring indications of the antiquity of the strata which compose that part of the crust of our globe with which we are acquainted (excepting some fragments of older strata) are derived from the animal and vegetable remains which they contain, it is astonishing that, by the aids of comparative anatomy and analogical reasoning, upon a basis apparently so inadequate, so solid a superstructure as Geology now presents has been raised. At the talismanic touch of the immortal Cuvier, the scattered facts relating to this branch of knowledge assumed the symmetry and coherence of science; and his labours have been ably followed up by many illustrious men, and particularly by our distinguished countrymen, Mr. Lyell, Professor Sedgwick, and Dr. Buckland. In its infancy, Geology had to struggle against uncommon difficulties, arising from gross ignorance, and the most perverse misapprehension of its objects and its tendencies. Some of the opponents of geological truth, by their virulence and intolerance, remind us of the Brahmin who, seizing a stone, crushed to dust the microscope that first showed him living things amongst the vegetables of his daily food. Surely the laws of Nature and of material phenomena can never speak other language than that of eternal truth. It has been justly said that "conflicting falsehoods we can comprehend, but truths can never war against each other;" and that "we have nothing to fear from the results of our inquiries, provided they be followed in the laborious but secure road of induction."

At its next meeting the Society was favoured with a paper by Mr. William Hawkes Smith, entitled "On Meteoric Stones, principally with a view to a Shower of Talc, which fell in 1807." This paper led to a lengthened and interesting discussion upon the various conjectures which have been advanced to account for the origin and formation of meteoric bodies, all of which seem to be attended with some startling difficulty. Until of late the most plausible hypothesis was considered to be that which attributed the descent of these bodies to a projectile force at the moon's surface; and the necessary velocity has been computed to be that of three times the swiftness of a cannon ball, which would bring such a body to the earth in two days and a half. But it seems difficul to account, on that hypothesis, for the generation of the great heat with which the descent of meteoric stones is attended, to say nothing nadir as in their zenith. Philosophers at present seem inclined to the belief that vast quantities of unconsolidated particles and small masses of matter traverse space, and, impelled by some projectile power, or by attraction, continue to move until they approach the earth or some other body; a notion which is corroborated by the recently observed periodical appearance of meteoric bodies near the close of the year. But against this hypothesis there are, nevertheless, considerable difficulties. The similarity of the constituent ingredients of talc with those of such meteoric bodies as have been subjected to analysis, is a remarkable coincidence; though it is to be regretted that the actual descent of that substance was not witnessed.

Mr. Follett Osler's "Review of the Meteorological Changes during the first half of the year 1837, with Illustrations from the Tables obtained by the use of the Self-registering Anemometer and Rain-gauge," excited great and deserved interest. Although the great agents of meteorological change have long been known, the science, at least in some departments, has made but slow advances. Nor is it to be wondered at that, invisible and impalpable as some of its elements are, they should long have eluded accurate observation. But with the perfection of instrumental aids, this interesting department of natural science will probably assume a certainty and perfection to be anticipated only by those who know what has been accomplished by diligent and patient observation in other branches of knowledge. Amongst other desirable results, a series of observations continued by these means for a sufficient length of time, will probably give a series of graphical curves representative of something like a cycle of the wind at particular places, and lead to generalizations applicable to objects of great social importance. Some curious and valuable practical results have been obtained by the observation of the phenomena of storms and hurricanes in the West Indies and on the coast of the United States; and the tracks of many of them have been laid down, and found to be, in general, portions of an elliptical or parabolic circuit, whose vertex is uniformly found to be in or near a certain latitude.

Mr. Francis Clark's "Observations on some Official Statistical Returns, with Hints for the Collection of Statistical Data," presented us with much curious and valuable information, and offered several important suggestions in the compilation of tables and returns. This branch of science is now attracting its fair share of notice; and the amended form and greater accuracy of the tables which have of late been published by authority, attest the prevalence of a more correct estimate of the importance of statistical science in all its details. Statistical knowledge is eminently important in its practical application to the moral and physical exigencies of society. It is a great recommendation of this branch of knowledge that though, to the superficial observer, its details may seem to consist of disconnected facts, irreducible to any stable principle, they are really subject to general laws as fixed and immutable as the law of gravitation. I have often thought of it as a practicable matter that the actual elements of social condition may be reduced to certain formulæ, capable of easy and natural comparison with similar expressions applicable to the condition of other countries; exhibiting the various forms, if not exposing some of the causes, of national prosperity and revenue, and suggesting the remedies of some at least of the incidental evils of social life: a noble application, indeed, of statistical science!

On a subsequent evening, Mr. Dawes gave the Society an account of a new and important mode of applying hydrogen gas, in the manufacture of iron; being, in fact, an application on a great scale of the principle of the blow-pipe. The object of Mr. Dawes's improved process is, to produce a purer and better commodity by preventing the oxidation incidental to the blast, which is at present so prolific a source of waste, both as respects fuel and metal. It is an extraordinary circumstance that Great Britain is still obliged annually to import large quantities of iron, for the purpose of conversion into steel. Every thing that concerns the improvement and commercial production of this great national staple, which shall obviate or diminish the casualties which seem inseparable from the present mode of manufacture, is of great general as well as local moment; and I am sure the Society will be thankful to receive from Mr. Dawes the results of his later experiments upon a process which, though promising, had not, at the time he delivered his paper, fully realized his expectations.

Having taken this imperfect review of the proceedings of the past year, I will detain you only a few moments longer, while I recal to your attention the leading objects and probable prospects of our association. It is a happy effect of societies like this to bring together, for the prosecution of a common object, men of different pursuits and professions, who upon other matters hold various and conflicting opinions, which too often operate as a principle of repulsion. The cooperative principle, so important as a stimulus in associations for other purposes, commercial, benevolent, or political, cannot but be an important auxiliary in associations like ours. Our institution makes no lofty pretensions; its members are attracted from the ordinary paths of social life by the conviction that knowledge is the only imperishable possession, and by a mutual desire to learn and to communicate; in short, to assist in concentrating some at least of the scattered rays of mental light.

Let it not be objected that these ends are to be effected only by the favoured Aristocracy of Nature, upon whom has been conferred the splendid endowment of intellectual superiority. Some of the greatest achievements of the human mind have been made by men not raised above the common level of their race. What is all philosophy but a search after happiness, vith a view to make it the subject of deductive generalizations applicable to the advancement of human happiness? It was the profound observation of that illustrious man, Sir Humphrey Davy, that "the knowledge of the philosopher differs from that information which is the fruit of common experience not in kind, but in degree;" and that "the object which the philosopher aims at in his researches is precisely the same with that which every man of plain understanding, however uneducated, has in view when he remarks the events which fall under his observation, in order to obtain rules for the future regulation of his conduct." It is true that it is not every observer, however accurate, who can thread the maze of consequences which are often perceived at a glance, by the gifted mind to result from a single fact, like Clairant, who, from some perturbations in the motions of certain of the planetary bodies, conjectured the existence of a seventh planet, and the position of its orbit, many years before it was discovered; but the great provinces of observation and experience offer some rewards to all who to common diligence unite a desire to taste of the fruits of knowledge.

Again, some of the noblest conquests of science have been nothing more than applications and adaptations of known natural principles, or inferences which astonish by their very simplicity, from facts patent to every observer.. Thus, the same principle explains the descent of bodies to the earth's surface, the ascent of vapour, and the motions of the planets. The oscillations of a lamp in the cathedral of Pisa, a phenomenon seen by numberless spectators before, suggested to Galileo the isochronism of the pendulum, and led to the observation that a long pendulum vibrates more slowly than a shorter one, according to the square root of its length. These simple facts suggested the application of this curious instrument as the most correct measure of time, and an unvarying standard of linear measure; and in the hands of Newton it became the means of measuring the intensity of gravity at different parts of the earth's surface, and thence of determining its true figure, as Fontenelle observes, without quitting his elbow chair. The discovery of the Torricellean vacuum soon led to the application of the barometer as a means of obtaining the most accurate admeasurements of mountain elevations. The same object is attained by formulæ founded on the difference between the standard and the actual mean temperature, as indicated by deep wells and shaded springs, or the depth of any place below the boundary of perpetual congelation. A problem relative to a game of chance, proposed by a man of the world to an obscure Jansenist, gave birth to the doctrine of chances, or rather of probabilities, now a branch of mathematics applied to almost every subject of human investigation. Some of the most curious discoveries respecting the polarization of light resulted from an observation made by the celebrated French philosopher Malus, in 1810, while looking through a prism of calcareous spar at the light of the setting sun reflected from the windows of the palace of the Luxembourg. Hauy was led to his theory of the structure of chrystals by the accidental circumstance that, while looking over the cabinet of Mons. Defrance, a hexahedral prism of carbonate of lime separated from a group, which, having a corner broken off from the base by which it had been attached, led him to attempt to detach similar corners from the other angles, and enabled him, after some time, to succeed in bringing into view its rhomboidal nucleus.

Such instances might be multiplied indefinitely; and surely they speak the language of encouragement and of hope to us, in whose locality are assembled so many curious processes of chemical and mechanic art, which continually offer new and curious facts for scientific scrutiny. The increased facilities for affording the benefits of a solid education are the sure and auspicious proofs of a correcter estimate of its value. The renovation of some of our educational institutions, and the rise of others, point to the certain perpetuation of every institution having for its object the diffusion of knowledge, and exhort us to our proper course of duty until our successors shall be prepared to take our place. In conclusion, let me quote the appropriate sentiments of the Roman orator, in his great work on the Republic. Our country, says he, has not given us birth and cherished us as if she expected no succour from us, or that, seeking to administer to our own convenience only, she might afford a safe retreat for the indulgence of our ease; *but that she might hold in pledge the various and most exalted powers of our mind, for her own benefit; and that she might leave for our own private use such portions only as might be spared for that purpose.*

CRITICAL NOTICES OF NEW PUBLICATIONS.

The Education of the Feelings; 12mo, London and Edinburgh, 1838; pp. 200.

When he undertook the composition of this Essay, its author appears to have been duly sensible of its difficulty; and, as the best means of surmounting this, he manifestly prepared himself for a proper accomplishment of his task, with an ample supply of reading and reflection on the principles of mental science and their applications. His little volume is introduced with the profession that its chief objects are, to urge the great importance of moral education, to show the bearing of a few great truths upon it, and to point out the natural laws which the Creator has established as the rule by which the Feelings are to be trained and cultivated.

Education of the Feelings is here restricted to imply their cultivation by exercising those of them which make us *wish* to do what we *ought* to do. Food is absolutely necessary to support life, and the Creator has implanted in us a strong desire to take sustenance when requisite; so, with regard to religion and morality, the Creator has not merely told us *what* we ought to do, but he has also given us feelings—such as love and reverence towards himself, the moral sense and benevolence—which make us *desire* to perform the duties enjoined by His laws. But we must know what the Feelings *are* before we can be prepared to undertake their proper management: wherefore, with a view to procure this indispensable knowledge, we should apply for instruction to the teachers of mental philosophy, whose province it is to show what are the mind's faculties and their functions, to explain the manner in which they act, and to point out their adaptation to external objects. This process has been adopted by the author whose plan for Educating the Feelings we are now considering; and, from the system of psychology most approved by him, he educes an exposition of the principles of human nature as the best calculated to advance the ends of education. His table of the mental constitution distinguishes each of the mind's faculties, with their uses and abuses, in a manner so explicit as to enable a judicious person, having experience in the management of children, and in the practical application of principles, to ascertain the power of each feeling possessed by each individual, and thus to obtain correct rules for the proper restraining of some feelings and the strengthening of others. Herein consists the philosophy of moral training, as exercised for self-discipline and for improvement of the young and uninstructed.

Having sketched a philosophy of the mental constitution, the author proceeds to exhibit an illustrative "*Example;*" and this, as we judge, is pregnant with the best feeling, and the soundest "philoprogenitive" wisdom. We transcribe his sentences, and pronounce them worthy of the gravest consideration:—"The views above adopted of the nature of man," he begins. at page 19, "have as yet been little acted upon in education; the time is come, however, when we may hope that they will be better understood, and that, by an improved system of education, the exercise of Religion and Benevolence will be daily more cultivated, until they shall become universal. That this is not at present the case is not surprising, when we consider that the selfish feelings are the first that come into action, that they act powerfully of themselves, and that they will not go on properly without the guiding and restraining influence of the intellect; whereas the intellect requires instructing before it is capable of taking charge of the propensities; so that upon our first entrance into life, the propensities not being guided by the unerring hand of the Creator, but depending upon reason for their right exercise, will, if not directed by some other intellect, run into excess and abuse, and some of them probably acquire a predominance to be retained through life. What, then, is the first essential in moral education? Assuredly, that the moral feelings and intellects of those who undertake it should be well trained and devoted to their proper objects. Children are at first almost entirely the creatures of sympathy and association; they take the direction of their propensities and feelings from those with whom they are immediately connected; not what is said to them, but what is done before them, is of all-importance; for they can imitate an example before they can understand a precept. Can we, then, be too cautious as to whom we intrust the charge of expanding the young affections, of instilling into the new being those principles of piety and benevolence which are to constitute its future happiness? Surely not. Yet to whom, would we ask, is this task usually committed? Must we not say that, in ordinary cases, nursemaids, grossly ignorant, and with selfish feelings decidedly predominant, are chosen to this important office? That they are so unfitted is the fault of their education, or rather their want of it; yet how frequently do we find that a girl, unfit for any other occupation, is placed as the companion and guardian of a child, to train it up in the way it should go! If it be granted that our nursemaids are inefficient, do we find that mothers, even amongst the higher classes, are usually adequate to the office? If you look but to the education, the training, which young ladies commonly receive—to their course of life at that period of existence, when they ought to be qualifying themselves for the important trust which may hereafter devolve upon them—the question answers itself. What part of their studies or pursuits bears any direct relation to the sacred responsibility they so lightly take upon themselves? They come to the task ignorant of the anatomy, the physiology, the mental constitution, of the young being whose charge they undertake, and of all the most important provisions for insuring its health and happiness. Engaged in the frivolous pursuits of the world, introduced into society at an early age, dressing, dancing, visiting, when they are called to the most momentous duties they are obliged to rely upon an ignorant nurse, to trust to old women's tales for what ought to have been correct knowledge. The consequent mass of evil and suffering, of vice and misery, is beyond calculation. Deep and awful, then, is the accountability of those giddy and thoughtless beings who voluntarily immerse themselves in maternal duties, without first seriously and anxiously considering whether they be capable of discharging them. If the mother herself be in no respect fitted for a companion and example to her own child, serious must be the evil; another and common case is that, however, where the mother has a tolerable share of right feeling and good sense, but from want of knowing or sufficiently appreciating the importance of the trust committed to her, is disposed to charge others with the burden and trouble of it, who may be less capable than herself of fulfilling the duty. In many families the children seem to belong more to the nursemaid than to the mother; the nursery or kitchen is deemed the proper place for them, and a visit to the parlour is rather an exception to the rule. We say nothing of the folly of expecting a child to behave properly in the parlour, when it spends the greater part of the day in the kitchen or the nursery; what is of infinitely greater moment—can we expect a child to feel properly, when constantly surrounded by those whose own feelings are not sufficiently well directed to excite correct ones in its mind? And when the child is admitted to the society of its parents and their friends, how is its education managed? So long as it sits quietly and makes no noise, and looks like a little block of wood, it is called a good child, and perhaps overwhelmed with kisses—that is to say, it is commended for being inanimate and indolent, and for making no use of any one of its faculties. But as soon as it begins to grow restless, to pull about every thing within its reach, and to urge eagerly, and perhaps noisily, its oft-repeated question concerning this thing and that, the bell is rung, the child is considered a nuisance, and given to the servant, and while its little heart is bursting with shame and disappointment, which it can only express by cries and sobs, "naughty child" is reiterated, and it is again banished to the nursery. Thus is it punished for being happy, for employing its powers, for making its own best efforts for expanding its little mind; and precisely at the moment when all its faculties are in the best possible state for receiving right impressions, and for being directed to any thing and every thing that is good and useful, they are all checked, bad feelings are excited, and it is sent amongst those who may perchance misunderstand its wishes, and thwart, perhaps punish, its anxious desire to know and to improve; leaving the poor child with a deep and bitter sense of unjust treatment. That children must not talk and be troublesome in company, is an axiom; but it is one which very young children (and it is of such that we are speaking) cannot understand. If properly trained, they will in time learn to prefer the happiness and comfort of others to their own; but for this we must wait patiently, and take care, meanwhile, that we do not sacrifice their lasting good to our momentary convenience."

With this ample extract as an illustration of the author's preceptive rules for disciplining children, we consign his "Education of the Feelings" to the judgment of our readers, merely adding, for ourselves, that on every page of his Essay appear the beautiful features of candour and genuine philanthropy.

OUTLINES OF PERIODICAL LITERATURE,

RELATING TO THE NATURAL SCIENCES & PHILOSOPHY.

UNDER this department of the *Analyst*, we propose to specify the principal essays communicated through the journals of Periodical Literature, with the object of improving the natural sciences and philosophy; and, by our best endeavours in this way, to promote the enlightened views of cotemporary naturalists, and also to assist the studies of our friends by facilitating reference to their favourite investigations. We begin with the

Annals of Natural History; or Magazine of Zoology, Botany, and Geology; being a continuation of the *Magazine of Zoology and Botany*, and of Sir W. J. Hooker's *Botanical Companion;* conducted by Sir W. Jardine, Bart.—P. J. Selby, Esq.—Dr. Johnston—Sir W. J. Hooker—and Richard Taylor, F. L. S. 8vo, London, 1838, with graphic illustrations.

As its title indicates, this Periodical forms a continuation of the *Magazine of Zoology and Botany* and of the *Botanical Companion*, with an extended range for embracing the researches of geologists. The distinguished Editors, as an illustrious philosophical quinquevirate, profess themselves desirous of making the *Annals of Natural History* not merely a vehicle for original communicacions pertaining to this comprehensive subject, but as a means of enabling their readers to keep pace with the progress of scientific knowledge in every stage of its advancement. Four monthly numbers of the *Annals* are now submitted to the judgment of Naturalists; and, in designating the articles *seriatim*, we experience much pleasure in pronouncing our admiration of their excellence.

I. This first number opens with a paper on a new Oscillatoria, the colouring substance of Glaslough lake in Ireland, whereof the water is green as that of the sea, and contains innumerable minute flocculi which, on being examined under the microscope, are found to consist of exceedingly fine simple fibrils belonging to the Oscillatoria *ærugescens*, so named and described by Dr. Drummond its discoverer, from its assuming a bluish verdigris colour on drying. 2. Some remarks on the Germination of the Limnanthemum *lamnosum* illustrate Dr. Griesbach's peculiar views on this subject, with his reasons for proposing a new nomenclature of the Menyanthes and Villarsia, as generic appellations: a plate, with nineteen figures, explains the principles on which his opinions are founded. 3. The title of this is contributions to the natural history of Ireland, continued from the *Magazine of Zoology and Botany*, ii, 440: it treats of birds in the order *Insessores* whereof eleven are designated. These are Sylvia *rubecula* the redbreast; S. *tithys* the black redtail; S. *locustella* the grasshopper warbler; S. *phragmitis* the sedge warbler; S. *atricapilla* the blackcap warbler; S. *hortensis* the greater pettychaps; S. *cinerea* the whitethroat; S. *sibilatrix* the wood wren; S. *trochilus* the willow wren; S. *hippolais* the chiff chaff; and S. *regulus* the gold-crested wren. The author of the communication, Mr. Thompson, is not a mere biblical ornithologist; he describes his birds from observation of their habits, in a state of natural freedom. 4. Mr. Gray gives an account, with denominations, of some new species of quadrupeds and shells procured from Sierra Leone; and two of the former are characterized. He represents the Antilope *zebra* as the most brilliant of all the kindred tribes; and his Felis *neglecta* is a highly interesting animal, in size like a small leopard. Fourteen different kinds of shells are distinguished and named, by this ingenious naturalist: these are, Aporrhais *senegalensis*, Fusus *elegans*, F. *niveus*, Nassa *vitrea*, Cardium *læve*, Turbinella *spinosa*, Drillia *umbilicata*, D. *clathrata*, D. *bicolor*, D. *suturalis*, Demoulia *pulchra*, Buccinum *retusum*, Pleurostoma *tenuis*, and Mactra *sauliana* so "named in honour of Miss Saul of Poplar a most industrious and liberal collector of shells." The *drillia* and *demoulia* are new genera: the latter is intermediate between the *nassa* and *dolium*, and their diagnostic features are here described. 5. This is a translation from the first volume of the *Mémoires de la Société des Sciences Naturelles de Neufchâtel*, and it forms the prodromus of a monograph of the Echinodermata by Dr. Louis Agassiz whose paper manifests his profound acquaintance with the subjects of his investigation. 6. Observations on the Scottish Mollusca Nudibranchia by Dr. G. Johnston are illustrated with a plate representing sixteen figures. He divides the tribe into two families, the Doridæ and Tritonidæ, and then describes eight kinds of the former—the Doris *tuberculata*, D. *obvelata*, D. *bilamellata*, D. *laevis*, D. *pilosa*, D. *nodosa*, D. *nigricans*, and D. *barvicensis*, with references to their economy. 7. This consists of Letters from Mr. Cuming at Manilla, Dr. Schomburgh at New Amsterdam and Demerara, and Mr. Gardner at the Organ-Mountains in Brazil, with sketches of the observations and discoveries of these adventurous naturalists.

II. Article eighth of the *Annals* is Mr. Berkley's anglo-hellenic exercise on the fructification of the Pileate and Clavate tribes of the Hymenomycetous Fungi, and this is illustrated by a plate with fifty-seven figures. He traces a history of the state of knowledge, in 1838, respecting the hymenium in the *Agaricine* family; and he adduces many facts to confirm his theory—that a quaterniary arrangement prevails in the cryptogamous plants. 9. Mr. Gunn's notices accompanying a collection of quadrupeds and fish from Van Diemen's Land, are followed by Mr. Gray's descriptions of new species. Among the Mammalia, he specifies the Thalacinus *cynocephalus*, Phalangista *cookii*, P. *vulpina*, P. *fuliginosa*, Perameles *gunnii*, Phascolomys or *wombat*, Dasyurus or *devil*, D. *viverrinus*, Hydromys *chrysogaster*, the Echidna which is harmless and makes good food, and the Kangaroo of four kinds—the boomer or forrester, the brush, the wallabee, and the rat kangaroos. His Fish, are the nurse, leather-jackets, parrot-fish and the sea-horse. 10. Mr. Reade argues, that spiral vessels do exist in the roots of dicotyledonous plants, and his facts in support of this induction appear to be conclusive. 11. His description of the Scottish Mollusca is continued by Dr. Johnston; and his subjects are, Tritonia *hombergii*, T. *arborescens*, T. *plebeia*, Melibea *pinnatifida*, M. *coronata*, Eolidia *papillosa*, E. *cuvierii*, E. *rufibranchialis*, E. *purpurascens*, E. *plumosa*, E. *despecta*, Triopa *claviger*, and the T. *nothus* a beautiful animal, and remarkable for the darkness and disposition of its colours. Mr. Gray was the first to discriminate this genus; and he has named it in allusion to *Triops* one of Neptune's sons: a plate, with eleven figures, contains his graphical illustrations. 12. Some original remarks on the Genus Torreya are advanced by Dr. Arnott, who also propounds a new systematic description of the male and female trees: the name honours Dr. Torrey of New York, a liberal and enlightened botanist. 13. Observations on the Procyon or Raccoon with the distinctions of two new species, from the pen of Prof. Wiegmann, occupy this article: to avoid mistakes, the five species of Raccoon are described—the Procyon *lotor*, P. *hernandesii*, P. *brachyurus*, P. *obscurus* and P. *cancrivorus*. The professor announces his desire to obtain an accurate account of the country of the different species, with a view to fixing their geographical range. 14. Two new genera of Californian vegetables are designated by Mr. Nuttall; they are, the Anemia *californica* and the Diplacus whereof the species *punicea*, *glutinosa*, *latifolia*, and *longiflora* are noted. 15. Mr. Tweedie's journal of an Excursion from Buenos Ayres to the Serras de Tandil, includes information not undeserving the attention of farmers and phytologists.

III. His observations on the Coregoni of Loch-Lomond, with a plate and two figures, afford Dr. Parnell an opportunity of describing two species which he proposes to designate the Coregonus *lacepedii* the long-nosed powan, and the C. *microcephalus* the short-headed powan: the corregoni are also called fresh-water herrings, and yield a wholesome and delicate food. 17. Mr. Gardner gives an account of his journey to, and residence in, the Organ Mountains, with remarks on their vegetation: he notices the plants peculiar to the marshes, pastures, cultivated lands, bushy-places and virgin-forests. 18. The Irish *Insessores* are continued by Mr. Thompson: his subjects are the Moticilla *alba* the pied wagtail, M. *boarula* the gray wagtail, M. *flava* the yellow wagtail, Anthus *pratensis* the meadow pipit, A. *aquaticus* the rock pipit, Saxicola *œnanthe* the wheat-ear, S. *rubetra* the whinchat, S. *rubicola* the stonechat, Parus *major* the great titmouse, P. *cœruleus* the blue titmouse, P. *palustris* the marsh titmouse, P. *ater* the cole titmouse, P. *caudatus* the long-tailed titmouse, P. *biarmicus* the bearded titmouse, and Bombycina *garrula* the bohemian wax-wing. 19. A new English species of Urtica is described by Mr. C. C. Babington: he denominates it the U. *dodartii*, adding its specific characters and those also of the D. *pilulifera*, according to the Linnæan rules. 20. Mr. Berkeley resumes his notices of the British Fungi, from the *Magazine of Zoology and Botany*, and his subjects are these—*Agaricus* fulvus, decolorans, grammopodius, unguinosus, calyptræformis, pudens, erythropus, vaillantii, conchatus, cyanus, bolanis, reticulatus, trechisporus, centunculus and depluens, *Cantharellus* lutescens, undulatus and fissilis, *Merulius* tremellosus, *Polyporus* spumeus, *Botetus* fellens, *Thelephora* lævis and lactea, *Clavaria* fritillaris and flavipes, *Typhula* gracilis, *Pistillaria* culmigena, *Helvella* elastica, *Peziza* melaloma and rhabarbarina, *Dacrymyces* urticæ, *Sclerotium* neglectum, *Sphæria* ophrioglossoides, pedunculata, hippotrichioides, riccoidea, populina, sinopica, acervata, pardalota, obducens, avellanæ, ostruthii, dianthi and vagans, *Cystipora* orbicularis and *Labrella* ptarmicæ. A plate, with thirty figures, illustrates these notices most of which are derived from actual observation. 21. Mr. White characterizes a new species of Epilobium nearly allied to E. *angustissimum* and E. *rosmarinifolium*, and he denominates it the E. *canescens* so as to give a suitable idea of its habit: his comparative description of the three species is intended to determine their mutual affinities and diagnostic distinctions. 22. In the *Companion to the*

Botanical Magazine, Mr. Allan Cunningham began a specimen of the botany of New Zealand: he proceeds with his list, giving the Piper *excelsum*, Peperomia *urvilleana*, Damara *australis*, Phyllocladus *trichomanoides* and *rhomboidalis*, Podocarpus *ferrugineæ* and *totarra*, Dacrydium *mai*, D. *plumosum*, D. *excelsum*, D. *cupressinum*, Urtica *ferox*, U. *debilis*, Elalostema *rugosa*, Hedicaria *dentata*, H. *macrophylla*, H. *angustifolia*, H. *scabra* and Brousonetia *papyrifera* When completed, Mr. C's specimen will constitute a valuable addition to phytological history. 23. Mr. Ogilby remarks on some parts of 4 and 9 of the *Annals*, and then describes two new kangaroos from Van Dieman's Land: he distinguishes them as the Macropus *fructicus* and M. *rufiventer* which is the native wallabee. 24. Mr. Kotschy is exploring different countries of Western Africa, as botanist to an expedition of Austrian geologists, and has been very successful in his researches for new and rare vegetables.

IV. Mr. Thompson describes zoologically the *Surnea nyctea*, or Snowy Owl, from a specimen shot in the north of Ireland and from three live birds, on whose economy and habits he makes new and interesting observations. 26. A fifth article on the natural history of the British Entomostraca, by Mr. Bird, in continuation from the *Magazine of Zoology and Botany*, is illustrated by a plate exhibiting fifteen well delineated figures. This paper is devoted to the anatomy of the Daphnia *pulex*, D. *vetula*, D. *reticulata* and D. *cornuta*, with their habitates and synonymes. 27. Mr. Berkeley renews his notices of British Fungi, and describes the *Lepostroma* juncinum, *Diderma* contextum, *Didymium* melanopus, *D.* xanthopus, *Diachea* elegans, *Stemonitis* typhoides, *S.* arcyroides, *Arcyria* ochroleuca, *Ascosricha* chartarum with a full and valuable "notice," *Isaria* arachnophila, *I.* intricata, *Anthina* flammea, *Syzyyites* megalocarpus, *Myxotricum* chartarum, *M.* deflexum, *Helminthosporium* clavariarum, *Dematium* echinobotryum, *Macrosporium* sarcinula, *Aspergillus* alternatus, *Botrytis* citrina, *B.* curta, *Penicillum* fasciculatum, *Oidium* chartarum, *Epochnium* macrosporoideum, *Sepodonium* roseum, *Xenodochus* carbonarius, *Torula* graminis, *Cylindrosporium* ficariæ, *Uredo* artemesiæ and *U.* pompholygodes: in this article are several very interesting remarks and a plate exhibiting six illustrations. 28. Mr. Schomburgh's phytography of the Triplaris *americana* or ant-tree is more comprehensive than that of his predecessors, and it includes an account of the "light brownish" insect which inhabits the hollows of the trees distinguished by its name. 29. From the "*Recherches Anatomiques et Physiologiques sur Garance*," by M. Decaisne, there is an extract in which the author communicates much highly-important imformation on the *root* of the Madder: the English version is particularly-well executed, and thus adds value to the very valuable original. 30. Mr. J. E. Gray begins a catalogue of the *Slender-tongued* Saurians, with descriptions of many new genera and species: he proposes a new arrangement—a *typical* group, comprising the saurians and ophidians, and *annectant* groups, including the amphisbenians, chelonians and emydosaurians: this catalogue will carry a reform-bill, uncontaminated with hypocrisy, selfishness, and injustice, into the saurian corporations; it deserves the best attention of naturalists. 31. In a letter to Professor Lindley, the characters of nine new species of Glumaceæ are delineated by Dr. C. J. Ners von Esenbeck, who assigns to them as appellations—the Melica *colpodioides*, Lophochlaena *californica*, Polyantheriae *hystrix*, Poa *donglasii*, Chasmantium *ornithorinchum*, Ceratochloa *simplex*, Eragrostis *cretacea*, Meoschium *griffithii* and Isolepis *hispidula*. There would be less appearance of a deviation from the rules of ordinal nomenclature of botany, if the *Glumaceæ* or chaff-bearing vegetables were designated from the name of a typical plant. 32. Mr. Eyton proceeds with his attempt to ascertain the Fauna of Shropshire and North Wales; his contributions to this local ornithography commenced in the *Magazine of Zoolgy and Botany*: he comes now to Aves, and of these he specifies one hundred and seven subjects. 33. Mr. J. E. Gray explains his views concerning the Phalangista *cookii* in an additional communication. 34. The prodomus of a monograph of the Rodiata and Echinadermata is continued by Dr. Louis Agassiz; and, in this article, forty species are characterized. 34. The descriptions of British Chalcidites, by Mr. Walker, relate to the Insecta Tetraptera- *stirps* ichneumonina, *order* chalcidites and *genus* cirrospilus: whereof five species with thirty-six varieties, are enumerated—Cirr. *vittatus*, C. *thasus*, C. *elegintissimus*, C. *salatis* and C. *diallus*; and these are succeeded by Mr. J. E. Gray's new species, with a figure, of Tetrapturus, which he names the *herschelli* in honour of Sir John Herschel its discoverer. At a meeting of the Zoological Society in October of last year, Col. Sykes read a paper on the identity of the Wild Ass of Cutch and the Indus with the Dreggetai or Equus *hemionus* of Pallas, a proposition which the colonel supports with many facts and ingenious arguments, founded on actual observation. Mr. Curtis described five new genera of Coleoptera, at a meeting of the Linnæan Society, May 1st, and these are the cascellius, cardiophthalmus, odontoscellis, cyllocellis and metius, all belonging to the Carabidæan family. On the same occasion, Mr. Bentham clearly shewed that the *Arachis* should be placed among the Hedysareæ, and also adduced good reasons for referring the *Voandzeia* to the Phaseolæ: of the former, he distinguished five species—the Arachis *hypogæa*, A. *glabrata*, A. *pusilla*, A. *prostrata*, A. *villosa*, and A. *tuberosa*, by their diagnostic characters. Dr. Traill's remarks on the ossiferous caves of Cefn in Denbighshire, were read at a meeting of the Royal Society of Edinburgh, and the professor illustrated his paper with a view of the cliffs of Cefn, and with a plan and sections of the principal cave. Among the proceedings of the Royal Academy of Berlin, appear some ingenious and geological and zoological observations by M. Von Buch on the Jura of Germany: he considers the "jurassic" chains to have been originally produced in their present form, with their canal-like valleys which traverse four or five times the whole breadth of the chain, and with their deep inlets or sections. With five miscellanies on the Fungi of India, the Trachypterus *vogmanus*, the Otis *tarda*, the zoology of Java, and the two species of Echidna; and with three meterological observations and a table, we arrive at the end of June for the first year of the *Annals* which, after a careful inspection, we appreciate highly, and recommend earnestly to the consideration of all practical naturalists.

The London and Edinburgh Philosophical Magazine, and Journal of Science; being a continuation of the Annals of Philosophy; conducted by Sir

David Brewster, F.R.S. Richard Taylor, F.L.S. and Richard Phillips, F.R.S. 8vo, London, 1838.

The current year begins with No. 71, vol. xii of the Third Series of this Periodical which, from the excellence of its management and its merits, has long been regarded as a work possessing much influence and authority. Our intention is to make the *Analyst* a source of reference to the most important of its valuable contributions to philosophy and the sciences.

JANUARY.—Researches on the Maximum Density of Liquids, extracted from two Memoirs of M. Despretz are given in a translation, and his experiments with the results prove—that sea-water, and all aqueous solutions, acid, alcoholic, saline and alkaline, have a maximum of density; and that this maximum sinks much quicker than the freezing point, the variation of which, as well as that of the density, is nearly in proportion to the quantity of matter added to the water. In an investigation, through a series of elaborate formulæ, Mr. Torey endeavours to show mechanically the cause of elliptical polarization; and, next in order, come Mr. Kennedy's observations upon the Œconomy of several species of Hymenopterous insects. These are Cratomus *megacephalus*, Spyga 4-*guttata*, Trypoxylon *figulus*, T. *clavicerum*, Crabro *spinipectus*, Stigmus *troglodytes*, Diodontus *insignis*, D. *gracilis*, D. *corniger*, Pemphredon *lugubris*, P. *morio*, P. *unicolor*, Psen *atratum*, Odynerus *quadratus*, O. *bidens*, Hylæus *signatus*, Chelostoma *florisomnis*, Osmia *bicornis*, O. *spinolosa*, and Heriades *campanularum*. Some new facts are recorded here by Mr. K. who appears to be a well-informed and indefatigable observer. We bespeak attention to Mr. Bird's observations on induced Electric currents, with his description of a magnetic contact-breaker which, we hope with him, will be found eventually of service to the chemist for electrolytic purposes, and for conveniently applying voltaic electricity in the treatment of diseases. Article V. is a contribution from Sir D. Brewster, on a singular development of Polarizing Structure in the Crystalline Lens after death, and on the cause, the prevention, and the cure of cataract: may the proposed method prove eminently successful. In addition to the two already known combinations of iodine and mercury—the yellow iodide and the scarlet biniodide—Mr. Hunt gives an account of a third, the tritiodide of mercury, with a process for its evolution. Mr. Walgon propounds a new mode of exhibiting the colours of thin plates, and Mr. Simon has discovered a new vegetable base in the root of the white hellebore, along with veratria: he calls it Jervine, and applies to it some very peculiar properties. A method of analysing Organic Compounds is submitted by Mr. Rigg, with reference more particularly to agriculture, to horticulture, and to some of those manufactures wherein vegetable products are employed. Dr. Falconer's and Captain Cautley's joint account of a Fossil Monkey from the Sewâlik Hills is illustrated by two plates with nine figures: this, and the notice of Fragments of the Sivatherium, make an important contribution to fossil zoography. The record of meteorological observations at Bermuda by Col. Emmett, with his notice of an Aurora Borealis in low latitudes, is followed by Mr. Lubbock's communication on the wave-surface in the theory of double refraction, and by Mr. Noad's experimental remarks on the peculiar voltaic conditions of iron and bismuth. We are furnished with a most interesting article on the structure and growth of the more perfect plants, extracted from Professor Meyen's Report of the progress of Vegetable Physiology for the year 1836, originally published in Wiegmann's journal. "*January*," concludes with Mr. Sylvester's analytical development of Fresnel's optical theory of crystals, and with a supplementary number, including Mr. Walter's notice on the bichromate of the perchloride of Chrome, Professor Forbes' observations on Meteors, reports of learned Societies, and a dozen of brief but valuable miscellanies.

FEBRUARY.—This chilly month is introduced with a paper on a new property of Nitre by Mr. Talbot: he regards this property as having an immediate bearing upon the fundamental doctrines both of double refraction and of crystalline structure, and thinks they require some modifications. Col. Hall's meteorological observations made during a residence of ten years in Colombia, include an exhibition of facts greatly conducive to the philosophy of climate, and their usefulness is extended by his general table of temperatures and elevations. On the results of long and patient investigation, Dr. Dalton founds an essay on the constitution of the atmosphere, with an account of the sulphurets of lime; and, next in order, we have Mr. Lubbock's article on the divergence of the numerical coëfficients of certain inequalities of longitude in the lunar theory. Dr. Schleiden's observations on the development of the organization in phænogamous plants, in an English version, with a plate exhibiting thirty illustrative figures, is a paper both curious and instructive. It is followed by Mr Watkins' modifications in electro-magnetic motive machines; a plate represents his apparatus, which has the appearances of aptitude and ingenuity. Mr. Matteucci presented to the French Academy an account of his physical, chemical, and physiological researches relative to the torpedo, with some remarks on the contractions of the frog produced by the contact of the muscles with the nerves; it appears here in Mr. Francis' translation. Under the heads Proceedings and Miscellanies, are several chemical, magnetical, electrical, and meteorological sketches; and with these the "*February*" is respectably finished.

MARCH has an experimental introduction in a letter addressed by Professor Schœnbein to Dr. Faraday, on the mutual voltaic relations of certain peroxides, platina, and inactive iron. Three analytical articles stand in succession: these are, Mr. Bird's notes on indirect chemical analysis: Mr. Rigg's further observations on the ultimate analysis of organic compounds: and Mr. Brett's analysis of six double salts of mercury—the *chloro-cyanides* of ammonium, of sodium, of calcium, of magnesium, of barium, and of strontium, and mercury. Dr. Schleiden concludes admirable observations on the organizations of phænogamous plants; and Mr. Prideaux describes the *Kauri* or Cowdee Resin, with his experiments in relation to its employment in the arts: and next in course are Mr. Lubbock's formulæ on the variation of the arbitrary constants in mechanical problems. Four short communications succeed—a chemical analysis of the substance of the electrical apparatus of the torpedo, by Mr. Matteucci: Mr. Talbot on a new property of the iodide of silver: Mr. Tovey's remarks on Prof. Sylvester's development of Fresnell's optical theory of crystals: and Prof. Johnston on the composition of certain mineral substances of organic origin; and first, of middletenite. There is then an interesting passage selected from Macfadyen's Flora of Jamaica, relating to the cultivation and uses of the indigo plant; and lastly, under the sections intituled Proceedings of Learned Societies, and Miscellanies, the list of biographical, astronomical, geological, chemical, and physiological, presents high claims to attention.

April comes in with Dr. Andrews' account of his experiments on the action of nitric acid upon bismuth and other metals; and, for the second article, we have further experiments of Prof. Schœnbein on the current excited by chemical tendencies, independent of ordinary chemical action. Four chemical communications follow—Mr. Powell's notes on repulsion by heat: Mr. Giraud's observations on the nature and properties of teredide of chromium; Prof. De Morgan on the relation between the number of faces, edges and corners in a solid polyhedron: and Prof. Johnston on the received equivalents of potash, soda, and silver. B. D. then offers a curious exposition of the path of the projectile weapon of the natives of Australia, called the *boomarang*, or kylee, at present a very general source of exercise and amusement. Six papers, mathematical and chemical, occupy as many places in succession: thus, Mr. Smith's method of finding the equation to Fresnell's wave-surface: Mr. Taylor's description of two calculi composed of cystic oxide: Prof. Johnston's description and analysis of hatchetine: Messrs. Pelouse and Richardson's resarches upon the products of the decomposition of cyanogen in water: notes of Prof. Sylvester's to his analytical development of the optical theory of crystals: and Mr. Jerrard's interpretation of the occurrence of the form $\frac{0}{0}$ in passing from general to particular values of certain algebraic functions. Among the Proceedings of Learned Societies, and with justly-merited distinction—are, a view of M. Becquerel's electrical researches, a view of Mr. Whewell's researches on the tides, a paper by Sir D. Brewster on the colours of mixed plates, another by Mr. Ivory on the attractions of homogeneous ellipsoids, the eleventh series of Dr. Faraday's researches in electricity, Mr. Wharton's explanation of the phænomena of intermitting springs, Prof. Daniell's letter on voltaic combinations with reference to the mutual relations of generating and conducting surfaces, Prof. Powell's researches towards establishing a theory of the dispersion of light, and Sir W. R. Hamilton's address at the Royal Irish Academy—an address remarkably distinguished by pure learning, sound judgment, and exquisite taste. Mr. Scoresby's improvements in magnetical apparatus, and Messrs. Dumas and Liebig's analyses of the citric, tartaric, and organic acids, have a place as miscellaneous articles.

May gives us several chemical articles to begin with—remarks on a singular case of the equilibrium of incompressible fluids, by Mr. Pratt: Prof. Johnston on the dimorphism of the chromate of lead, and on the composition of ozocerite: sequel to an essay on the composition of the atmosphere, by Dr. Dalton, who concludes that the proportion of oxygen to azote in the atmosphere on the surface of the earth is not precisely the same at all places and times; and that, in elevated regions, the proportion of oxygen to azote is somewhat less than at the surface of the earth. Mr. Brooke's note on the apparent cause of isomorphous substitution: and Mr. Phillips' observations on isomorphism in reference to Mr. Brooke's communication. Mr. Brooke's observations on urinary calculi, with a descriptive account of the collection in the museum of St. Bartholomew's Hospital, make important addition to pathological chemistry: they include a table exhibiting the relative frequency of each species together with the order of succession of the layers in the alternating calculi. Phenomena, both new and curious, are unfolded in Messrs. Coopers' paper on the luminosity of the human subject after death, with remarks and details of experiments made with a view to determine the nature of the fact. As proceedings of the Royal Society, are the twelfth and thirteenth series of Dr. Faraday's experimental researches in electricity: Mr. Bowring's proposal for a new method of determining the longitude, by an absolute altitude of the moon: Mr. Reade's inquiry into a new theory of earthy bases of vegetable tissues: Mr. Bunt's description of a new tide-guage: and Captain Newbold's account of the *Régar*, or black cotton soil of India, which he believes to be a sedimentary deposit from waters in a state of repose. At the Geological Society, Mr. Whewell delivered the anniversary address: one portion only of this is here published, and it records the characters of deceased members. Mr. Westwood's description of several new species of insects belonging to the family of the sacred beetles, appears as a proceeding of the Zoological Society: Mr. Waterhouse's characters of a new subgenus of *mus*, and of the *reithrodron* and *abracoma* two new genera of rodents: Mr. Sells' observations on the *vultur aura*, with Mr. Owen's notes of dissections of the heads of two specimens: and Prof. Airy's paper on the intensity of light in the neighbourhood of a caustic, bring us to the miscellanies. These comprise an outline of Prof. Pullen's astronomical lectures at Gresham College; Mr. Dutrochet's experiments shewing the influence of temperature, light, and mechanical irritation and chemical agency, on the circulation of the *charaflexis*; M. Dujardin's description of a new double salt formed of two acids united to one base, and called by him the oxalo-nitrate of lead; M. D'Arcet on the action of iron at a high temperature on camphor, and on benzoic acid, producing benzin; M. Ehrenberg on the adulteration of carmine; M. Rose on tungstate of chloride of tungsten, which he regards as a remarkable compound, because tungstic acid, which is one of the most fixed substances, is rendered volatile.

JUNE.—Mr. Rose read an essay on the formation of calc-spar and arragonite, before the physico-mathematical class of the Academy of Sciences at Berlin, and we have it here in Mr. Francis' translation: this article records the deductions from a course of practical researches, and constitutes an important addition to the stores of experimental chemistry. Of the same character, are the observations on sulphureous æther and sulphate of ætherine, by Dr. Hare; and Prof. Johnston's communication on the supposed analogy in atomic constitution between the earthy carbonates and alkaline nitrates. Mr. Potter adds to his former detail of results from his photometrical experiments, and concludes that they press upon our attention, with full force, the inadequacy of the undulatory theory of light. The first part of Mr. Laming's essay on the primary electrical forces, is experimental and inductive: he endeavours to "test the new theory" by reference to experiments already known and to facts generally acknowledged. Mr. Hogg submits a specimen of a thermometrical diary; and Mr. Wright makes observations on Dr. Buckland's theory of the action of the siphuncle in the Pearly *nautilus*, with an illustrative figure; and then we arrive at the proceedings of learned societies. Mr. Whewell's anniversary address to the Geological Society is concluded; and, among the transactions of the Royal Astronomical Society, are Sir J. F. Herschel's and Professor Henderson's account of a remarkable increase of magnitude of the star η in the constellation *Argo*; the value of the mass of Uranus, deduced from observations of its satellites, by Dr. Lamont of Munich; and other short notices. We have notes of observations at the Zoological Society, by Mr. Bennett on the tentacula of Physalia *pelagica*; by Mr. Gray on the cephalopod inhabiting the argonaut; by Mr. Bell on the genus Galictis which, with the two species G. *vittata* and G. *allamandi*, he characterizes; and by Mr. Ogilby on the Hylobates *choromandus* a new species of Gibbon. Before the Linnæan Society several papers have been read—Mr. C. C. Babington's on the structure of the Cuscuta *europæa* the greater dodder; Mr. Griffiths on the Mosses of Upper Assam, including many not hitherto described; Mr. Scomburgh's on the Mora *excelsa*, a lofty and singular tree, native in the forests of British Guiana, affording timber of excellent quality, being close-grained, strong, tough, and durable, and not liable to split; and Mr. Valentine's on the existence of Stomata in Mosses where these organs were generally supposed to be absent until Mr. V. discovered them in the Bryum *crudum* and the Fumaria *hygrometrica*, in which last they consist of a single cell in the form of a hollow ring. The Theory of Volcanoes, constituted the subject of a paper read at the Royal Institution, by Mr. Brayley, whose object was to explain the theory of volcanic action dependent on that of the secular variation of the isothermal surfaces within the globe, and to offer reasons why the chemical theory of volcanoes originally proposed by Sir Humphrey Davy should not be discarded as a mere chemical dream. Mr. Blake's experiments relating to the electrical currents produced during the processes of fermentation and vegetation; Mr. Watkin's letter on the decomposition of water by thermo-electricity; and Messrs. Dease and Simpson's discovery of the north-west, come under the head of intelligence and miscellanies, which are followed by meteorological observations and a table closing the "June" of this very instructive and philosophical journal.

The Phrenological Journal and Magazine of Moral Science; 8vo, London and Edinburgh, 1838.

This Journal first appeared on the field of literature in 1823; and, "from the first moment of their undertaking, the proprietors have been actuated solely by the desire to cultivate and extend the knowledge of what they considered to be a science fraught with the most beneficial consequences to the human race; and they have endeavoured to accomplish this end in that spirit of purity and peace which their philosophy so strongly inculcates on those who embrace its truths." Fifty-three quarterly numbers, forming ten thick volumes, having been completed, the conductors open a new series of their periodical with No. LIV, and renew their engagements to prosecute the original objects of the journal in the same generous spirit and with unabating zeal.

Embracing the comprehensive range of psychological investigation, this magazine exhibits the materials of its composition under this distinct order of arrangement:—1, *Miscellaneous Essays*, devoted especially to the elucidation and improvement of Mental Science and its practical applications. 2, *Cases* and *Facts*, having relation to the structure and functions of the brain and nervous system, whether in a state of health or disease, with disquisitions on ethical questions even when discussed without reference to organization. 3, *Notices* of *Books*, comprising an account, analytical or critical, of such works as tend to promote the study of mind and its manifestations. 4, *Short Communications* designed to form an assemblage of such hints, suggestions, observations, criticisms, and prospective and retrospective notes as occur to the minds of correspondents. 5, *Notes* on *Opinions*, *Intelligence*, and *Biographical Sketches* intended to convey information with respect to the proceedings of societies, to lectures and discussions, and to the memorials of distinguished psychologists. As an inducement to those who may feel disposed to ascertain, from personal examination, how well these pretensions have been realized, we proceed to select the outlines of the current eleventh volume: our own conviction is, that the Editors have amply and honourably redeemed their pledge; and, with this satisfactory impression, we enter on a survey of their

No. LIV.—An address by the original proprietors and conductors of the Journal, and a prefatory explanation respecting the plans and prospects of the new Editor, introduce the volume. Dr. Combe evinces, with equal suavity and force of demonstration, the fallacy of Professor Tiedemann's comparison of the Negro brain and intellect with those of the European: the doctor establishes this position also, as the strangest thing of all—that Tiedemann's conclusions or arithmetical results are directly at variance with the evidence of his own facts and figures, and strongly confirmatory of the opinion which it his sole purpose to refute. Mr. Combe's letters on the institutions of Germany, afford much valuable statistical information regarding the state of mental philosophy, in some of the continental cities. There are great good sense and much harmony in the Remarks on the function of the faculty and its organ, through whose instrumentality the mind perceives melody: the writer's object is, to assist observers in their labour, by giving a more precise description of *Sound* as it occurs in music. An improvement of organological busts is suggested by Mr. Hytch; his reasoning is replete with sentiment, and he may be thought persuasive. C. B. states the case of his own head, in which the organs of Concentrativeness are small, while those of Inhabitiveness are supposed to be large: this case displays ingeniousness and sincerity for its characters. The facts of a peculiar revival of memory, of a spectral illusion, and of a monomania apparently induced by great and unusual excitement of the faculty of Tune through its organ, merit unprejudiced attention. The short communications, notes on opinions and intelligence will furnish topics of profitable mental exercise and self-discipline in counteracting the poison of prejudice, to well-regulated minds.

LV.—Suggestions on the requisites for the advancement of mental science are very judicious: they conclude with the remark, applicable to all the sciences—that, simplicity and precision, not fine writing, should be esteemed a first excellence in the literature of science, and especially so in the record of its facts. An experiment proposed for preventing the atrocities committed in New South Wales by transported convicts, deserves the serious consideration of those who take an interest in the diffusion of human happiness. Mr. Combe remarks on the organological busts, and regrets that, by the manner in which Mr. Hytch treated this subject, he should furnish the opponents of phrenology with a plausible pretence for affirming that the very elements of accuracy are disregarded in this of observation. In a letter on Antipathies, Sir G. Mackenzie proposes a subject which, as the editor says, "is abundantly worthy of minute attention, but will require exact observations, and a very careful analysis of the cases observed, before useful results can be expected." Mr. Simpson visited Mr. Heldenmair's school at Worksop, and he describes its economy with approbation. From his facts to show the connexion of disease with war, Dr. Barlow derives the conclusion—that war not only gives rise to disease; but, wherever a tendency to disease exists, war increases its force and augments its fatality. Four miscellaneous articles are occupied with the discussion of matters relating to the new science of mind: six papers containing cases and facts; notes on opinions; short communications; and intelligence, bring us to the end of the number, which is distinguished by extensive and varied erudition, and especially by a fine tone of moral feeling.

LVI. comprises nine "Miscellaneous Papers," beginning with an exposition of Dr. Elliotson's characters of the original phrenological discoverers: this is distinguished by exemplary candour and its irresistible effects: the doctor is a gallic idolater and combats with the recklessness of a cyclopic gladiator, in exaltation of the image he would compel the world to worship. Observations on the new system of colonization, with reference to South Australia and New Zealand in illustration, have for their chief purpose to show, that political economists ought constantly to keep in view the influence of different mental characteristics in producing results from fixed extrinsic circumstances, and that the planters of colonies should pay due attention to this important element in their calculations of the means for ensuring success. The recent attacks on the new science of mind are considered with great good humour, and they are proved to be a mere array of false or fallacious or foolish imaginings by the strength of the strongest demonstration. In this article, a liberal magazine is convicted of "a spirit too sordid and grovelling for the appreciation of the higher moral bearings of phrenology." Mr. Simpson's letter on sound and tune, is not inharmonious: his reasonings on force and resistance, are weighty and sensible. The sixth and seventh papers happily expose two "deliberate attempts to impede the progress of knowledge and truth," on the part of those comfortable little philosophers who jocosely designate themselves "the great in science." Mr. Hytch offers some ingenious suggestions on the unascertained Organ above that of Ideality," and he seems to regard it as the instrument of a Faculty which enables us to experience a "*love of the past*:" it is followed by a succinct account of the causes which occasioned the resignation of Sir W. C. Ellis as superintendent of the Middlesex county lunatic asylum. Among the seven "Causes and Facts," the first is one of congenital idiocy, and the subject of it, a boy, is represented as "a living fact supporting the truth of the great physiological principle—that the brain of a human head measuring only fourteen inches in horizontal circumference is inadequate to perform its function of manifesting mind sufficient for the necessary business of society, or even for the individual's own preservation." The rest are entituled, a curious affection of language; an instance of temporary derangement induced by a sudden shock to excited benevolence; a sudden affection of the philoprogenitive feeling; a notice on the cerebral development of a professor lately deceased; an apparently singular phenomenon in apoplexy; and a case where loss of the perception of colours intervened upon a defect of vision in one eye, and was concomitant with deficiency in the organ of colouring particularly on the same side. These papers are well calculated to gain the attention of students, inquisitive for entertaining or scientific knowledge. Through seven "notices of books" and a chapter of remarks on eight periodicals, we are brought to a "note" on M. Dubois' new philosophical deductions applied to the study of idiotism and insanity; and this note concludes with the sentiment—that M. Dubois' classification of idiots is too vague, and his employment of the terms *instinctive, intellectual*, and *reasoning*, appears to be altogether arbitrary, for the purpose of giving the semblance of exact classification without the reality. The "short communications" are—on an empirical anticipation of phrenology, classical studies, lesions of the brain, dreaming, the heads of Jeremy Bentham and Confucius, and on the innate dispositions to attack and to resist. From the "intelligence" we learn—that in all corners of the land, there are societies, institutions, and lecturers actually engaged in cultivating the new mental science, and in encouraging its beneficent applications. We are persuaded that the peaceful and highly moral Miscellany here delineated, would furnish the general reader with a larger share of rational amusement and of instruction adapted to promote the spread of human happiness, than most of those periodicals which evince an inclination to seize the advantages of popularity through the mere noise of extravagant pretensions.

The Edinburgh Medical and Surgical Journal, exhibiting a concise view of the latest and most important discoveries in Medicine, Surgery, and Pharmacy: 8vo, Edinburgh and London, 1838.

No. CXXXV., for April, 1838, or the fifty-eighth number of a new series, embraces some articles on subjects in chemistry and phytology. The first is an account of the liquidization and solidification of carbonic acid gas, an interesting experiment successfully performed by Dr. Hope, in the chemical class-room of the University of Edinburgh, and witnessed by many distinguished scholars, philosophers, and naturalists. 2. This is a sketch of observations on the grains of Teel, or Till, or Ramtill, the Nook in Abyssinia, the Verinnua or Kertrello in Hindostan, and the edible oil obtained from it, accompanied with a list of the botanical names by which the plant has been designated in the systems of different phyptographers: it is the Ramtilla *oleifera* of Decandolle; and two varieties, the wild and cultivated, are known. 3. Dr. Peck's remarks on the Aralia *hispida*, the bristly berry-bearing angelica, show that it might be efficaciously administered in medicine: to the advantages of an energetic diuretic operation, it unites that of being agreeable in taste, and more easily endured by the stomach than all the other remedies of the same kind. 4. When discoursing on the Ceanothus americanus, the New Jersey tea, Dr. Hubbard relates as a fact in history, that the leaves of this plant were employed as a substitute for tea during the period of the American revolution: these leaves are slightly bitter and astringent. 5. Dr. Antony exhibited the leaves of the Amygdalus persica, the peach tree, as a sedative in fevers of a remittent type, in some cases of cholera without vomiting, and frequently in the diarrhoea of infants, with the happiest results. An infusion of the leaves has proved an excellent remedy in hooping-cough, and their use might be profitably extended to other derangements of the nervous circulation. 6. In the canton of Richmond, in America, there exists a kind of clay which is sought by many persons, especially children, as food; Prof. Cotting has published an analysis of it, and found that 100 parts of it furnish, silica 31, oxide of iron 12, alumina 34, magnesia 10, water 12, with loss 1, and it presents vegetable without any trace of animal matters. 7. Mr. Froriep addresses an appeal to physiologists, and we transcribe it here, with a supplication to naturalists in behalf of the beetles and butterflies. Man, the philozoist observes, may *use* animals, but he may not *abuse* them. The necessity for instituting physiological experiments on living animals, we do not deny; but, for the sake of humanity, we may be allowed earnestly to entreat that, as soon as the object of the experiment admits, the animal may be put to death. Very often do we see experiments performed on living animals in cases where one just previously deprived of life would answer the purpose quite as well; and how frequently does it not happen that a mutilated creature is carelessly thrown away, and left to breathe out life, by slow degrees, in the cruelest of tortures! The writer once saw, in illustration of a lecture, the heart of a frog laid bare and beating. Four-and-twenty hours afterwards, he found the same animal on the same table, where it had been carelessly left lying, its heart still beating! If the sufferings of the poor animal be not regarded, it may perhaps be worth considering whether there may not be thus produced a hardening effect upon the minds of the youthful pupils of science, and whether society at large may not suffer through the consequences. If it be undesirable that a butcher should fill the office of a juror in cases affecting life, this presupposes an obtundity of feeling; and if here the slaughtering and subsequent cutting-up of animals produce such an effect, how much more must not the reckless dissection of living ones deprave the heart, and render it incapable of sympathizing with suffering humanity? Among the original communications is a contribution, by Mr. Marshall, to Statistics of the Mortality among Horses in Cavalry Corps serving in the United Kingdom, together with the number of horses cast, and some preliminary observations respecting the selection, training, and feeding, of horses belonging to dragoon regiments. This contribution proceeds from an intelligent and observant medical officer: his remarks may be perused with advantage by fox-hunters, steeple-chasers, race-riders, by the whole tribe, indeed, of those light-headed heroes who delight in the doings of the road, the course, and the turf; and, entertaining this notion, we recommend it to their especial consideration. There is a highly important and instructive analysis of Mr. Colquhoun's report of the proceedings under a "brieve of idiotry," with an appendix of relative documents, and an introduction: it exhibits a compendious view of the law applicable to such cases, and forms an excellent addition to the illustrations of medical jurisprudence. This Journal continues the long series of periodical literature which commenced at Edinburgh in 1731; and, while many cotemporaries or rivals have begun, or changed, or terminated their career, this work maintains its uniform course, exercising an influence, and conferring on the branches of science to which it is devoted, a moral and intellectual dignity altogether unparalleled in the records of philosophy.

The Magazine of Natural History, and Journal of Zoology, Botany, Mineralogy, Geology, and Meteorology; conducted by Edward Charlesworth, F.G.S. 8vo, London, 1838.

While this excellent Magazine proceeded under the management of its original and enterprising Editor, it contributed essentially towards exciting an interest in the pursuits connected with the investigation of natural objects. In the hands of its present zealous and enlightened conductor, the Journal has well maintained its former high character in all respects; and, in many, it deservedly enjoys an increase of reputation arising from improvements in the exercise of its influences and their usefulness. With the opening of the year 1838, a new series of the Magazine was commenced, under the new editor's superintendence; and, in confirmation of our estimate of his labours and success, it is merely necessary to refer to the numerous valuable and judiciously diversified articles whereof the first volume is composed. This periodical is intended to form a channel for making known the discoveries and observations of those who are engaged in the study of natural history in any of its departments; and, with a scope so extensive and an aim so commendable, it evidently possesses strong claims for regard and encouragement from all who delight in cultivating the most interesting of the sciences. We introduce it, in sketches of the current volume, to our friends of *The Analyst*, beginning with

No. XIII., January, 1838.—In an English version of M. Adolphe Brongniart's curious and admirable reflections on the nature of the vegetables which have covered the surface of the earth, at the different periods of its formation. This article evinces much originality, both of observation and reflection: but the first sentence states, rather comically, that *curiosity* is one of the most distinctive *faculties* of the human mind. 2. Dr. Weissenborn gives the first part of an essay on the influence of man in modifying the zoological features of the globe, with statistical accounts respecting a few of the more important species: he concludes that there is no species whose natural relations have not been materially affected by human influence. 3. Mr. Thompson's notes upon the natural history of a portion of the south-west of Scotland, exhibit sketches of the Merops *apiaster*, or bee-eater, the Larus *islandicus*, or Iceland Gull, the Leptocephalus *Morrisii*, or Anglesea Morris, the Ianthina *communis*, or purple ocean-shell, and the Nemertes *borlasii*, or sea long-worm, which sometimes grows to twelve feet in length. 4. Dr. Clarke furnishes a sketch and description of a species of Argentine which he found upon the shore of the Firth of Forth: this highly-elegant little fish was found entangled in some masses of sea-weed left by the retiring tide, and this was its fourth occurrence upon the British coasts. 5. Mr. Westwood's communication on the *Coptosoma*, an anomalous group of hymenopterous insects, is illustrated with figures, chiefly of the upper wings, wherein the anomaly consists. 6. As a contribution to South African zoology, Dr. Smith characterizes eight species of the *Cordylus*, a saurian reptile, and these are—*C.* griseus, *C.* polyronus, *C.* nebulosus, *Hemicordylus* capensis, *Pseudocordylus* montanus, *P.* fasciatus, *P.* melanotus, *P.* algoensis, and *P.* subviridis. 7. An extremely valuable article on the generic characters of cartilaginous fishes, with descriptions of new genera, comes from Prof. Muller and Dr. Heule. Of the Scythian family of Sharks, the characters of six genera—*pristiurus*, *chiloscyllium*, *hemiscyllium*, *crossorhinus*, *ginglymostoma*, and *stegostoma*—are delineated. In the second division of sharks, there are five genera—*charcharios*, *scoliodon*, *zygæna*, *trinænobon*, and *leptocharias*, which are destitute of spiracles; and in the *galeocerda*, *loxodon*, and *galeus*, these organs are present. Five genera—*lamna*, *oxyrrhina*, *cancharodon*, *selache*, and *rineodon*—are distinguished: in them, every trace of a membrana nictitans eluded detection. 8. In remarks on the species of the genus Mustela, by the Prince of Musignano, the M. *erminea*, M. *cicognanii*, M. *boccamela*, M. *vulgaris*, M. *richardsonii*, M. *longicauda*, and M. *prænata*, with their localities, are distinctly specified. 9. Mr. Chambers particularizes the rarer indigenous plants growing in the neighbourhood of Tring, and he adds a just admonition to those botanical pedlars whose selfish rapacity in devouring specimens has occasioned the extirpation of many scarce vegetables. 10. Mr. Charlesworth's notice of the remains of vertebrated animals occurring in the tertiary beds of Norfolk and Suffolk, is transferred from the sixth report of the British Association. 11. Remarks on the production of chrystals, by Mr. Morris, report his opinion that, in our secondary strata, some of the sulphur has an animal origin, and is combined in a state of sulphuret and sulphate through all the argillaceous deposits. 12. Mr. Luxford relates his discovery of the Cucubalus *baccifer*, the berry-bearing chickweed, in the Isle of Dogs; and, in the mean time, he considers it as a naturalized plant. As articles of intelligence, we have a report concerning a female Orang recently added to the menagerie in the Zoological Society's gardens, and an account of scientific expeditions: and, for short communications, there are papers on the transmission of experience in birds in the form of indistinct knowledge; on the singular effect produced by change of temperature on small birds; and on the substitution of a new generic name, *Thetis*, for the second genus of Proteus in the class of infusorian animalcules.

XIV.—Notes on Mr. Cross's *Acarus*, by M. Turpin, who names it the *A. horridus*, in an English translation, are illustrated with a very distinct microscopic figure: the editor justly records his judgment that the foreign naturalist has not handled his subject in the most philosophic manner. 2. Experiments instituted by Mrs. Power with a view of ascertaining how far certain marine sestaceous animals possess the power of renewing parts which may have been removed, were attended with satisfactory affirmative results. 3. Another section is contributed to Dr. Wiessenborn's observations on the influence of man in modifying the zoological features of the globe. 4. With a description and figure of a species of Ray-fish, the sandy ray, not hitherto included in the British Fauna, Mr. Couch introduces this inhabitant of the ocean to the notice of English naturalists. 5. From a consideration of his observations on the existence of saline combinations in an organized state in vegetable structures, Mr. Bird deduces the opinion that the saline matters existing in the tissues of plants play a part in the economy of vegetable life which is as important as that of their other constituents; and that all principles, except carbon, hydrogen, nitrogen, and oxygen, are *not* foreign to vegetable structure. 6. Mr. Clarke communicates a second part to his illustrations of the geology of the south-east coast of Dorsetshire, with four sections of the stratification. 7. The generic characters of cartilaginous fishes, by

Prof. Muller, are resumed, with his descriptions of new genera—the triglochis, alopecino, cestracion, acanthias, spinax, centrina, centrophorus, scymnus, læmargus, echinarhinus, squatina, pristiophorus, rhina, rhynchobatus, rhinobatus, platyrhina, trygonorrhina, sympterygia, uraptera, trygon, hemitrygon, himantura, pteroplatea, tæniura, hypolophus, urolophus, anacanthus, urogymnus, myliobatis, ætobatis, cephaloptera, and ceratoptera. 8. Dr. A. Smith's farther contributions to the natural history of Southern Africa, are his remarks on the Naja *nigra*, N. *gutturalis*, Vipera *ocellata*, Lacerta *elegans*, L. *tesselata*, L. *livida*, L. *tæniolate*, L. *intertexto*, L. *etenodactylus*, L. *undata*, L. *lugubris*, L. *capensis*, and the Algyra *capensis*. 9. Some mistakes of M. Coste, the French naturalist, are corrected by Mr. Owen, respecting the *allantris* of the kangaroo and its embryology. 10. Mr. Sowerby describes a new genus of Trochidea, belonging to the family of phytophagous gasteropodes: he designates it T. *morrisii*, and gives a good figure in illustration.—11. In a succinct note on the Raputia *aromatica*, Mr. Hancock advances his reasons for concluding that *Raputia* not only forms a part of the order *Cusparideæ*, but that it is itself a true and legitimate species of the genus *Galipea*: he trusts to find his statements confirmed by further investigation. 12. The observations upon the best mode of preserving marine productions, by Mr. Harvey, recommend themselves, by their manifest excellence, to the attention of the practical naturalist. For scientific notices, there are, the substance of a communication from Mr. Crosse to the Electrical Society; notes on the Angustura-bark and its botanical characters, on the Victoria *regia* and the Euryale *amazonica*; an extract from the report of the botanical society; an account of the discovery and denomination of a new species of antilope, the A. *nigra*, of which no other other individual has yet been seen in Europe, or indeed known to African travellers; and the latest information relating to scientific expeditions. Some instances of longevity in animals—a parrot and a nightingale—stand in the place of short communications.

XV.—M. Desnoyers, in an English version, offers some considerations upon the position in the Tertiary System, to which the faluns of the Loire and the crags of England ought to be referred; and upon the difficulty of determining their relative age, solely by the law of the proportional number of fossil species analogous to species now in existence: appended to these considerations, is a temperate and valuable note by the editor, and in this he regrets being compelled to notice an instance of undue appropriation on the part of the continental naturalist. 2. Meteoric observations made in Germany in November of last year, are communicated by a lady. 3. From Dr. Weissenborn, we have another portion of his essay on the influence of man in modifying the zoological features of the globe: his discussions here relate to the common wolf, and he closes them with the saying, "*Censeo lupum funditùs esse delendum.*" 4. With five figures for the exhibition of characters, Mr. Clarke concludes his illustrations of the geology of the south-east of Dorsetshire. 5. Mr. Dalrymple furnishes some account of a peculiar structure in the eyes of fishes, and this is represented in two well-executed diagrams. 6. A few notes on the British species of the genus Polypodium, by Mr. Newman, relate to the P. *vulgare*, P. *phegopteris*, P. *dryopteris*, P. *thelypteris*, P. *oreopteris*, P. *cristatum*, P. *filix-mas*, P. *dilatatum*, P. *lonchitis*, P. *fragile*, and P. *ilvense*: his synoptical view of characters, with the introductory remarks, are perspicuous and practically valuable. 7. Mr. Ogilby's characteristic eloquence is successfully exemplified in his observations on Rules for Nomenclature.—For scientific intelligence, there are a note on the discovery of the allantois in the fœtal kangaroo; the lapse of one of the Royal Medals for 1837; information concerning the apteryx; and a report of the Botanical Society. As short communications, you find, a new locality for Polyommatus *arion*; a note on the crag-beds of Suffolk and Essex; remarks on the golden, sea, and bald eagles, and their nidification; and strictures on the proposed new name for Proteus the infusorian.

XVI.—Phytological science has acquired a rich enlargement in Dr. Unger's essay on the influence of the nature of the soil upon the distribution of vegetables. 2. Professor Owen's further illustrations of his discovery of the allantois of the kangaroo, an additional fact in the history of marsupial developement, are rendered more usefully interesting by judicious introduction of new and important physiological remarks. 3. and 4. Mr. Strickland and Mr. Westwood evince their zeal for improvement in the philology of natural history, by the remarks on Rules for Nomenclature. 5. Dr. Moore's observations on the occurrence of the Teredo *navalis* and Limnoria *terebrans*, in Plymouth Harbour, are conclusive in proving the existence of these formidable animals, and their depredations. 6. Remarks on the affinities of *Lythraceæ* and *Vochyaceæ*, by Sir E. F. Bromhead, are well calculated to facilitate the writer's object, and to render it practical. 7. In his descriptive and historical notes on the Cepola *rubescens*, the red band-fish, Mr. Thompson characterizes a specimen, nineteen and a half inches long, which was found on the coast of Ayrshire after a severe storm. 8. Dr. Mitchell describes certain deep and extensive beds, containing peculiar flints, in the neighbourhood of London: with the exception of various snail-shaped or leech-shaped bodies, fossil remains are rarely found in the flints of this locality. 9. For reasons adduced by him, Mr. Thompson conceives that Hunter's Delphinus *bidentatus*, Baussard's Hyperoodon *honfloriensis*, and Dale's Bottle-headed *whale*, are undoubtedly identical: the two former specimens were females, the latter a male, in his opinion. 10. A letter from Mr. Clarke explains his views with reference to the alleged occurrence of the bones of terrestrial mammalia in the red and coralline crags of Suffolk: he supposes these bones to have been washed or drifted into fissures of the crag, and there apparently stratified. 11. Dr. Weissenbsrn details the history of a Hydrophobia occurring among the Foxes in the kingdom of Wurtemberg and the neighbouring countries: this communication merits the best attention both of naturalists and physicians. 12. In observations on the Long-tailed *trogon*, the Prince C. L. Bonaparte describes this "lovely" bird, and registers it in the catalogues of science under the name of Trogon *paradisens*, the paradise *curueni*: there is a single instance of this bird having been domesticated. As a short communication, Mr. Cox notices a curious fact in the habits of the Viper; and the fact is, indeed, very curious.

XVII.—Dr. Weissenborn produces an elaborate and remarkably interesting essay on the Bos *urus*, the zubr or ure-ox, in an additional section of his dissertation on the influence of man in modifying the zoological features of the globe. 2. In his outlines of a new arrangement of Insessorial Birds, including remarks on affinity and classification, Mr. Blyth treats his difficult subject with great learning, ingenuity, and precision. He resolves the whole class of Birds into three primary divisions—*insessores*, *gressores*, and *natatores*

—and he regards anatomy, when aided by every character which the manner of propagation, the progressive changes and other physiological data supply, as the only sure basis of classification. 3. Mr. Newman sets forth a few remarks on the Antennæ of Insects, in relation to the theory that these appendages are analagous to the ears of higher animals. He shows how we conclude not only rationally but inevitably, that mice, hares, and other animals remarkable for the acuteness of their hearing, are indebted for that very acuteness to the extraordinary developement of the external portion of their auditory instrument—a conclusion which supports or confirms the fundamental physiological principle, that the *size* of an organ is the chief measure of its *power*. He proves also, that the supposed auditory faculty of the antennæ is nothing more than a vague and wild theory, unsupported by reason, analogy, or facts. 4. Mr. Ogilby favours us with further observations on rules for nomenclature, and he concludes an erudite and "poluphlosboiophanous" lucubration with the ominous announcement, that he has now done with codes and codification. 5. Mr. Clarke writes a letter on the non-identity of Suffolk diluvium and crag, and he promises future illustrations. For short communications, you have an account of the capture of the Haliætus *arbicilla* or white-tailed eagle, at the mouth of the river Orwell, on the Suffolk coast; a note on the locality of Brockite; and observations on the probable cause of the death of parrots and other birds confined in cages, with the necrotomical inspection of a cockatoo whose death was sudden.

XVIII.—Mr. Heysham advances some observations on the habits of the Charadrius morinellus, or dottrel, made in Cumberland during the summer of 1835; and, from the results of his own experience, he is convinced that this bird is not only a regular summer visitant, but annually builds on the Cumbrian mountains. 2. Dr. Weissenborn concludes his essay on the influence of man in modifying the zoological features of the globe, with his farther account of the ure-ox and its physiology. 3. His new arrangement of insessorial birds is continued by Mr. Blyth, and you will admire, as well as be instructed by, the outlines of his essay to accelerate the progress of scientific ornithology. 4. In a monograph of the genus Semnopitheeus, Mr Martin endeavours to distinguish and fix its characters. 5. In his additional remarks on rules for nomenclatare, you find Mr. Strickland discussing these important questions—the retrospective operation of rules; the terminations in *idæ* and *adæ*; the real signification of the word *Simia*; the etymological meaning of names; the distinction between absolute and relative characters; the signification of the word *type*; and on euphony: how glorious as gladiators, are these nomenclaturists with their altisonant weapons. 6. Mr. Skaife contributes some miscellaneous ornithological notes, and his subjects are the smew, white partridge, stormy petrel, pomarine gull, red-breasted merganser, wild swan, and canada goose, which he seems inclined to rank among the "Birds of Europe." As scientific intelligence, the recent transactions of the Zoological Society are detailed; Mr. Newman's description of twenty-one new species of Popillia are enumerated; and the proceedings at meetings of the friends of natural history at Berlin are recorded in the form of historical notices. You have short communications on the Cicindela *hybrida* and the Cuscuta *epilinum*; on improvements in the microscope; on the bones of mammalia in the crag; on woodcocks breeding in Ross-shire; on docility in a rook; and on a new method of setting-up fishes.

BOOKS RECEIVED.

1. *Experiments and Observations on the Gastric Juice, and the Physiology of Digestion*, by William Beaumont, M.D., reprinted from the American edition, with Notes by Andrew Combe, M.D. 8vo, Edinburgh, 1838.—Our next number will contain an account of this extraordinary and instructive volume.

2. *The Moral and Intellectual School-Book*, by William Martin; 8vo, London, 1838.—A most respectable compilation, replete with truly useful knowledge.

3. *Essay on a New Genus of Fossil Multilocular Shells*, by D. T. Ansted, B.A.; 4to, Cambridge, 1838, with an admirable and vivid sketch.

4. *An Address on the advantages arising from the mutual support and encouragement given by rich and poor to Friendly Societies*, by John Lee, Esq., M.R.C.S.L.; 8vo, Bosworth, 1838.—A seasonable, philanthropical, and irresistible appeal, in which the author's generous proposition is proved to a demonstration.

5. *Address of the Baronets' Committee on the chartered rights and privileges of the Order*, by William Crawford, M.A.; 8vo, London, 1837.

6. *The Education of the Feelings*; 12mo, London, 1838.

7. *The Young Lady's Book of Botany*, with numerous illustrations; 12mo, London, 1838.—A good book and agreeable.

8. *Astronomy Simplified, or Distant Glimpses of the Celestial Bodies*, by F. B. Burton; 8vo, London, 1838.—Written in familiar language, and admirably adapted to attain the author's benevolent aim.

9. *The Testimony of History to the Divine Inspiration of the Holy Scriptures; or, a Comparison between the Prophecies and their fulfilment*, by the Rev. W. J. Butler. M.A.; 8vo, London, 1838.—The powerful and eloquent author is perfectly successful in showing that the testimony of prophecy is completely conclusive as to the Divine Inspiration of the Bible: his work is popular, and should be carefully studied by all *unphilosophical* christians.

10. *The Functions of the Cerebellum*, by Drs. Gall, Vimont, and Broussais, translated from the French by George Combe; also answers to the objections urged against Phrenology by Dr. Roget, Rudolphi, Prichard, and Tiedemann, by George Combe and Dr. Andrew Combe; 8vo, London, 1838.—A clever, convincing, and curious production.

11. *A Bibliographical, Antiquarian, and Picturesque Tour in the northern counties of England and in Scotland*, by the Rev. T. F. Dibdin, D.D.; royal 8vo, 2 vols, London, 1838.—An analytical account of these entertaining volumes is prepared for our next publication.

In Exchange.—*The London and Edinburgh Philosophical Magazine*, No. 76, May; 77, June.—*The Magazine of Natural Historg*, No. 13, January; 14, February; 15, March; 16, April; 17, May; and 18, June.—*The British and Foreign Review*, No. 10, April, 1838.—*The Annals of Natural History*, No. 1, March; 2, April; 3, May; 4, June.—*The Phrenological Journal*, No. 1, December, 1837; 2, March, 1838; and No. 3, June, the new series.

MARCH.

MAR.	9 o'clk, a.m. Bar.	9 o'clk, a.m. Atchd. Ther.	3 o'clk, p.m. Bar.	3 o'clk, p.m. Atchd. Ther.	Dew Point, deg. Fah. 9 a.m.	Dew Point, deg. Fah. 3 p.m.	External Thermometers. Fahrenheit. 9, a.m.	External Thermometers. Fahrenheit. 3 p.m.	External Thermometers. Self-register. Lwst.	External Thermometers. Self-register. Hhst.	Rain in Inches, read off 9 a.m.	Direction of Wind at 9 a.m.	Remarks.
1	28.56	41.25	28.57	43.0	38.5	40.5	39.5	42.0	34.0	44.0	.440	S.E.	Fine morning; overcast, p.m.; rain at night.
2	28.64	43.5	28.66	45.5	38.5	41.0	38.5	42.75	38.5	43.5	.260	N.N.E.	Rain when dew point was taken; fair soon after, continuing all day
3	28.74	43.0	28.73	43.5	36.5	36.5	37.0	40.0	36.0	40.5	.005	N.N.W.	Fine morning; clouded p. m.
4	28.58	41.5	28.57	41.5	35.0	36.5	35.0	36.5	31.0	37.0		N.	Slight deposition of sleet at 9 a.m.; rain and sleet nearly all day
5	29.11	41.0	29.26	42.5	36.0	37.5	37.0	41.75	35.0	42.5	.200	S.W.	Fine morning; overcast p.m.; rain at night. Wind very variable
6	29.19	44.0	29.21	45.5	35 5	34.0	44.0	46.5	39.0	47.5	.100	S.W.	Fine morning; showers towards noon; hail storm at 1 p.m.; fair after. Much
7	29.31	43.0	29.29	45.0	36.5	37.0	41.5	45.5	37.0	48.0	.050	W.N.W.	Very fair, a.m.; lt. shrs. p.m. [wind S.W., greatst pressure, 12lb., at 11 a.m.
8	29.58	41.5	29.67	44.0	34.5	33.0	40.0	43.5	36.0	45.0	.005	W.N.W.	Very fair.
9	29.75	40.5	29.66	44.0	33.0	39.0	34.0	44.0	32.5	45.0		W.N.W.	Dense fog, clearing up towards 10 a.m.; very fair.
10	29.58	41.5	29.32	43.0	36.5	40.0	37.5	44.5	34.0	45.0		S.E.	Very fair a.m.; overcast p.m.; rain at night.
11	29.21	43.0	29.23	46.5	38.0	40.0	38.5	48.0	36.0	48.5	.020	S.E.	Fine morning; very fair all day.
12	29.58	43.0	29.61	46.0	36.5	37.5	39.0	47.5	35.0	48.0		S.	Very fair.
13	29.58	45.0	29.51	47.0	41.0	46.5	41.0	47.5	38.0	48.0	.005	S.S.W.	Rain while dew point was taken at 9 a.m.; clearing up towards noon.
14	29.49	50.0	29.44	52.5	47.5	48.5	48.5	53.0	47.0	53.5	.010	W.N.W.	Overcast a.m.; brisk wind from S.S.W., greatest pressure 8lb. at 5¼ p.m.
15	29.43	46.5	29.44	48.0	35.0	34.0	41.5	47.0	39.0	47.5		S.S.E.	Fair all day. [from S. & S.W., greatest pressure 11lb. at 11½ a.m.
16	29.27	44.0	29.12	43.5	36.5	36.0	38.0	39.5	33.0	45.5		S.W.	Fair till 11½ a.m.; hail at ¼ to 1, ending in snow, ceased at 1½; much wind
17	29.93	40.5	28.92	43.0	30.0	34.0	39.0	41.0	34.0	43.0	.140	W.S.W.	Fair; overcast towards 11 a.m.; hail & snow p.m.; wind S.W., gt. prs. 12lb.
18	29.08	40.5	29.07	43.5	31.0	31.5	40.0	44.0	34.0	45.0	.020		Very fair.
19	29.06	43.0	29.07	45.0	38.0	37.5	38.0	45.0	36.0	45.5	.020	S.W.	Overcast with a slight deposition 9 a.m.; clouded p.m.; rain at night.
20	28.55	47.0	28.65	45.0	40.0	35.0	47.0	42.5	41.5	47.5	.020	S.S.W.	High wind from S.W., gtst. force 23lb at 4 p.m.; 22lb. often during the day.
21	28.73	41.0	28.78	43.0	33.0	36.0	39.0	40.0	33.0	42.5	.005	S.	Overcast with an occasional slight deposition
22	29.06	38.5	29.12	40.0	33.0	33.5	35.0	37.0	34.0	37.5	.040	W.N.W.	Snow at 9 a.m., snow & sleet at intervals; frosty and clear at night.
23	29.07	37.0	29.03	38.5	28 5	29.5	32.0	37.0	29.0	40.0	.020	W.N.W.	An occasional slight deposition of snow; overcast p.m
24	29.0	39.5	28.96	42.5	33.5	31.5	36.0	42.0	33.0	43.0		S.W.	Overcast a.m.; rain towards night.
25	29.21	41.0	29.39	44.0	31.5	32.5	41.0	46.0	35.0	47.0	.120	S.W.	Overcast 9 a.m.; very fair after.
26	29.55	42.0	29.56	45.5	35.5	41.0	39.5	48.5	32.0	49.0		S.E.	Very fair.
27	29.76	43.5	29.77	48.0	35.5	39.0	43.0	53.0	34.5	54.0		E.S.E.	A fog, clearing up about 9 a.m.; very fair
28	29.97	48.5	29.97	51.0	42.5	45.0	45.0	55.0	40.0	55.5		W.N.W.	Morning hazy; very fair.
29	29.99	47.0	29.97	52.5	39.5	43.0	41.0	58.5	36.0	59.5	.005	W.	Very fair.
30	29.96	52.0	29.82	46.5	44.5	47.0	45.5	61.5	40.5	62.0		S.	Very fair.
31	29.67	48.0	29.63	47.5	40.5	41.0	42.0	40.0	40.5	46.0		W.N.W.	Overcast all day; rain towards night.
Mean	29.26	43.23	29.25	45.07	36.51	37.88	39.79	44.97	35.93	46.59	.695 *Sum.*		

	Barometer. 9 a.m.	Barometer. 3 p.m.	Thermometer.	Dew Point. 9 a.m.	Dew Point. 3 p.m.
Highest,	29.99, 29th	29,.97 29th	62.00 30th	47.5 14th	47.0 2nd
Lowest,	28.55, 20th	28.57, 1st	29.0, 23th	28.5 23rd	29.5 2rd

Height of the cistern of the barometer above the ground, 23ft. 6in.
Height of the cistern of barometer above the presumed mean level of the sea, 472ft. 6in.
Height of the external thermometers above the ground—Fah., 4ft. 6in.; Self-reg., 4ft. 6in.
Height of the receiver of the rain-guage above the ground, 38ft.

APRIL.

Apr.	9 o'clock a.m. Bar.	9 o'clock a.m. Atchd. Ther.	3 o'clock p.m. Bar.	3 o'clock p.m. Atchd. Ther.	Dew Point, deg. of Fah. 9 a.m.	Dew Point, deg. of Fah. 3 p.m.	External Thermometers. Fahrenheit. 9 a.m.	External Thermometers. Fahrenheit. 3 p.m.	External Thermometers. Self-register. Lwst.	External Thermometers. Self-register. Hhst.	Rain in Inches, read off 9 a.m.	Direction of Wind at 9 a.m.	Remarks.
1	29.68	39.5	29.66	42.5	30.0	30.0	35.0	39.0	27.0	39.5	.010	N.	Very fair.
2	29.58	39.5	29.51	44.5	23.5	31.5	36.0	44.5	29.0	46.0		S.S.W.	Fine clear morning; overcast p.m.
3	29.43	43.0	29.41	46.0	29.0	39.5	37.5	43.0	32.5	45.0		S.	Fine morning; overcast p.m.
4	29.41	48.0	29.52	49.5	42.5	39.0	49.0	51.0	41.5	52.0		W.S.W.	Fine morning; overcast with light rain p.m.
5	29.45	49.0	29.37	52.0	41.0	46.0	49.0	52.5	42.0	55.0	.015	S.W.	Fine morning, overcast with rain p.m.
6	29.17	53.0	29.2	53.5	50.0	49.0	53.0	52.5	46.0	54.0	.095	S.W.	Overcast, ending in light rain; rain at night.
7	28.95	53.0	28.67	54.0	48.0	47.5	49.0	51.0	47.0	51.5	.125	S.S.E.	Overcast; heavy showers; brisk wind from S.W., greatest pressure 16lb.
8	28.9	46 5	28.83	49.0	37,0	36.0	41.0	46.0	37.0	46.5	.495	W.N.W.	Overcast; fair after a gale from the West, greatest pressure 15lb.
9	29.25	45.5	29.31	47.0	30.0	35.0	43.0	46.5	36.0	47.0		W.N.W.	Fine morning; fair p.m.
10	29.41	47.5	29.48	53.5	46.0	50.5	46.0	56.5	40.0	58.0		S.	Overcast 9 a.m.; very fair.
11	29.59	54.0	29.52	59.0	49.5	49.0	51.0	60.5	49.0	61.5		S.	Very fair.
12	29.67	51.5	29.68	53.0	36.0	36.5	48.0	50.0	39.0	52.0		W.N.W.	Very fair.
13	29.75	48.0	29.65	49.0	33.5	33.0	42.0	47.0	37.0	47.5		W.N.W.	Overcast nearly all day; a brisk wind from W.N.W., maximum press. 7lb.
14	29.48	48.5	29.48	52.0	38.0	40.0	45.0	48.5	38.0	50.0		N.W.	Fine morning; overcast p.m. [at 7¼ p.m. 16lb; rain, hail, & snow, p.m.
15	29.22	50.0	29.22	51.0	43.0	35.0	49.0	51.0	41.0	54.0	0.25	W.S.W.	Overcast with light floating clouds a.m.; much wind from N.W., max. pres.
16	29.18	45.0	29.18	43.0	34.0	34.0	39.0	34.0	34.0	41.0	.170	W.	Snow near all day; st. of hail & sleet a.m.; bsk. wind W.N.W., grt. prs. 11lb.
17	29.15	41.5	29.18	44.5	33 0	34.5	39.0	43.0	31.0	44.5	.100	W.N.W.	Overcast; hail storms of short duration; gale W.S.W., max. 14lb at 10 a.m.
18	29.24	41.0	29.29	43.5	25.0	33.0	38.0	39.0	32.0	45.0	.005	W.N.W.	Morning fair; overcast towards noon; snow p.m. and during night; highest
19	29.28	40.5	29.26	43.0	31.0	34.0	36.0	43.0	30.0	44.0	.065	W.N.W	Morning fair; overcast p.m. [force of the wind 7lb.
20	29.3	42.0	29.26	44.5	32.5	33.5	38.0	44.0	34.0	44.5	.005	W.N.W.	Overcast; light floating clouds with occasional gleams of sunshine.
21	29.14	41.5	29.02	46.5	29.0	36.0	40 0	48.0	31.0	50.0	.015	W.	Fine morning; overcast p.m.; rain at night.
22	28.66	44.0	28.25	45.0	39.0	39.0	39.0	42.0	34.0	42.5	.170	S.E.	A heavy deposition at 9 a.m.; clouded with light rain nearly all day.
23	28.87	45.0	28.79	48.5	40 0	39.0	42.5	50.0	38.0	50.5	.180	S.	Fine morning; overcast ending in rain p.m.; wind very variable.
24	28.97	45.0	29.06	48.5	41.5	46.5	41.0	49.0	38.0	51.0	.075	N.E. b N.	Depos. of rain at 9 a.m.; hail, rain, and thunder a.m.; heavy rain at 3¼ p.m.,
25	29.33	46.5	29.35	48.5	43.0	45.0	43.0	26.5	40.0	48.0	.205	N.	Clouded all day; brisk wind and rain at night. [1/10in. fell in 10 min.
26	29.47	46.0	29.5	46.0	41.5	40.5	42.5	43.0	41.0	43.5	.030	N.	Overcast all day, with a brisk wind from the North.
27	29.48	44.0	29.47	45.0	35.0	39.0	42.0	46.0	34.0	46.5		N.N.W.	Overcast all day.
28	29.39	43.75	29.31	47.5	34.5	40.0	42.0	52.0	35.0	52.5		N.	Very fair.
29	29.24	44.5	29.22	47.5	32.5	36.0	43.0	45.0	33.0	45.5	.005	N.N.W.	Very fair; a slight deposition during the night.
30	28.97	45.0	28.96	46.5	38.5	36.0	42.0	47.0	36.0	47.5	.010	S.S.W.	Overcast all day; rain at night.
Mean	29.29	45.72	29.25	48.12	36.90	38.78	42.68	47.03	36.77	48.35	1.800 *Sum.*		

	Barometer. 9 a.m.		Barometer. 3 p.m.		Thermometer.		Dew Point. 9 a.m.		Dew Point. 3 p. m.	
Highest,	29.75	13th	29.66	1st	61.5	11th	50.0	6th	50.5	10th
Lowest,	28.66	22nd	28.25	22nd	27.0	1st	23.5	2nd	30.0	1st

Height of the cistern of the barometer above the ground, 23ft. 6in.
Height of the cistern of barometer above the presumed mean level of the sea, 472ft. 6in.
Height of the external thermometers above the ground—Fah., 4ft. 6in.; Self-reg., 4ft. 6in.
Height of the receiver of the rain-guage above the ground, 38ft.

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